NICE National Institute for Health and Care Excellence

NICE guideline

Physical activity: brief advice for adults in primary care

Public health guideline

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Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

This guideline partially replaces PH2.

This guideline is the basis of QS84.

Overview

This guideline covers providing brief advice on physical activity to adults in primary care. It aims to improve health and wellbeing by raising awareness of the importance of physical activity and encouraging people to increase or maintain their activity level.

Recommendations

This guideline includes recommendations on:

- identifying adults who are inactive
- delivering and following up on brief advice
- incorporating brief advice in commissioning
- systems to support brief advice
- providing information and training

Who is it for?

- Commissioners and practitioners
- Members of the public

1 Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

The evidence statements underpinning the recommendations are listed in the evidence section. Full details of the evidence are in the evidence reviews and economic modelling report for this guideline.

See also the recommendations for research and gaps in the evidence.

Background

The recommendations have been made within the context of other national and local strategies and interventions to increase or maintain physical activity levels in the population.

These might include addressing barriers to activity, for example, through changes to the physical environment or other measures to support an active lifestyle. (See NICE's guidelines on physical activity and the environment and walking and cycling).

The availability of local opportunities to be active will influence whether brief advice has an impact on people's physical activity levels.

Brief advice

The term 'brief advice' is used in this guidance to mean verbal advice, discussion, negotiation or encouragement, with or without written or other support or follow-up. It can vary from basic advice to a more extended, individually focused discussion.

Box 1 Physical activity: definition and current UK recommendations

Definition

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure. It takes many forms, occurs in many settings, and has many purposes (such as daily activity, active recreation, and sport).

Health-enhancing physical activity includes multiple types of activity: cardiovascular; muscle and bone strengthening; and balance training (see the UK Chief Medical Officers' physical activity guidelines for more information).

National recommendations

Follow the UK recommendations on the type, intensity and duration of activity (see the UK Chief Medical Officers' physical activity guidelines).

Box 2 Benefits of physical activity

- Prevents and helps to manage conditions such as coronary heart disease, type 2 diabetes, stroke, mental health problems, musculoskeletal conditions and some cancers.
- Has a positive effect on wellbeing, mood, sense of achievement, relaxation and release from daily stress.

Whose health will benefit?

Adults aged 19 and older who are inactive ('inactive' refers to those who are not currently meeting the UK physical activity guidelines).

Recommendations 1 and 2

Who should take action?

Primary care practitioners – that is anyone working in primary care whose remit includes offering lifestyle advice. Examples include: exercise professionals, GPs, health trainers, health visitors, mental health professionals, midwives, pharmacists, physiotherapists and practice nurses.

Recommendation 1 Identifying adults who are inactive

- Identify adults who are not currently meeting the UK physical activity guidelines (see box 1). This could be done, for example:
  - when the opportunity arises during a consultation with a primary care practitioner or while people are waiting
  - as part of a planned session on management of long-term conditions.
- Use professional judgement to determine when this assessment would be most appropriate, for example, when someone is presenting with a condition that could be alleviated by physical activity. When assessing activity levels, remain sensitive to people's overall circumstances. If it is not appropriate during the current consultation, carry out an assessment at the next available opportunity.
- Do not rely on visual cues (for example, body weight). Use validated tools such as the general practice physical activity questionnaire (GPPAQ) to assess physical activity levels. (This is an example of a validated questionnaire for assessing the current level of physical activity of someone aged 16 to 74. The index can be cross-referred to Read Codes and can be used to determine whether brief advice might be appropriate. See government guidance on using the general practice physical activity questionnaire.)
- For people who are not meeting the UK guidelines, identify the most appropriate time to discuss physical activity with them. This might be during the current consultation or in a later consultation, and might involve referral to another member of the primary care team. If they agree to a future consultation, make sure it occurs at the earliest opportunity. Ensure the person at least leaves the initial consultation aware of the health benefits of physical activity (see box 2).
- Record the outcomes of the physical activity assessment. Use Read Codes if appropriate. (Read Codes is the standard clinical terminology system used in general practice in the UK.)
- Encourage people who are assessed as meeting the UK physical activity guidelines (see box 1) to maintain this level of activity.

Recommendation 2 Delivering and following up on brief advice

- Advise adults who have been assessed as being inactive to do more physical activity, with the aim of achieving the UK physical activity guidelines. Emphasise the benefits of physical activity. (See box 1.)
- When delivering brief advice, tailor it to the person's:
  - motivations and goals (see NICE's guideline on behaviour change: general approaches)
  - current level of activity and ability
  - circumstances, preferences and barriers to being physically active
  - health status (for example whether they have a medical condition or a disability).
- Provide information about local opportunities to be physically active for people with a range of abilities, preferences and needs.
- Consider giving a written outline of the advice and goals that have been discussed.
- Record the outcomes of the discussion.
- Follow up when there is another appointment or opportunity. The follow-up could consist of a conversation about what physical activity someone has been doing, progress towards their goals or towards achieving the UK physical activity guidelines (see box 1).

Recommendations 3 to 5

Who should take action?

Commissioners of health services, including primary care and public health services.

Recommendation 3 Incorporating brief advice in commissioning

- When commissioning services to prevent or treat conditions such as cardiovascular disease, type 2 diabetes and stroke or to improve mental health, ensure brief advice on physical activity is incorporated into the care pathway.

- Ensure brief advice on physical activity is incorporated into services for groups that are particularly likely to be inactive. This includes people aged 65 years and over, people with a disability and people from certain minority ethnic groups.
- Include physical activity assessment and brief advice as part of a strategy for addressing domain 2 of the public health outcomes framework indicator on the proportion of physically active and inactive adults.
- Ensure assessment of physical activity and the delivery of, and follow up on, brief advice (see recommendations 1 and 2) are built into local long-term disease management strategies. Highlight physical activity as an independent modifiable risk factor for many conditions (see box 1). Strategies should also raise awareness of physical activity assessment as part of relevant quality and outcomes framework (QOF) indicators.

Recommendation 4 Systems to support brief advice

- Ensure systems such as Read Codes are being used to identify opportunities to assess people's physical activity levels and deliver brief advice.
- Ensure resources (for example, standard documents and forms) and systems are available to assess, record and follow up on the provision of brief advice.
- Ensure information about local opportunities to be active (including non-sporting activities) is available and up to date. This could include online maps and route finding for walking or adapted cycling.

Recommendation 5 Providing information and training

Provide information and training for primary care practitioners. This should cover:

- how physical activity promotion fits within their remit and how it can help prevent and manage a range of health conditions (see box 2)
- the definition of physical activity: what constitutes moderate and vigorous physical activity, and what intensity, duration and frequency of physical activity is needed to achieve the UK physical activity guidelines (see box 1)
- groups more likely to be inactive (see recommendation 3)
- misconceptions about who needs to increase their physical activity (based, for example, on visual cues such as body weight)

- how to undertake physical activity assessments
- local opportunities for physical activity
- the needs of specific groups, such as people with disabilities, including local opportunities for them to be physically active
- delivery of brief advice including, for example, the skills to motivate people to change (see NICE's guideline on behaviour change: general approaches).

2 Public health need and practice

Increasing physical activity has the potential to significantly improve both physical and mental wellbeing, reduce all-cause mortality and improve life expectancy. For example, increasing activity levels will help prevent and manage many conditions including coronary heart disease (CHD), cancer, diabetes, musculoskeletal disorders, obesity and stroke (Department of Health's start active, stay active). Physical activity can lower the risk of Alzheimer's disease (Scarmeas et al. 2009). It has also been shown to improve symptoms in those diagnosed with depression (Rimer et al. 2012). Physical activity also has a role in enhancing psychological wellbeing by improving mood, self-perception, self-esteem and reducing stress ('Start active, stay active').

The majority of adults and many children in England do not meet the Chief Medical Officer's (CMO) recommendations for physical activity. In 2008, based on self-reporting, 39% of men and 29% of women aged 16 and over met the CMO recommendations on minimum physical activity levels (Health and Social Care Information Centre's statistics on obesity, physical activity and diet: England, 2011). (The recommended level of activity for adults at that time was 5 episodes of at least moderate-intensity activity on at least 5 days a week. In 2011, this was changed to being active daily and accumulating at least 150 minutes of moderate-intensity activity, or 75 minutes of vigorous activity, in bouts of 10 minutes or more over a week. Additional recommendations on strength and balance, and for older people and children, were also developed ['Start active, stay active'].)

Physical activity levels vary according to income, gender, age, ethnicity, socioeconomic status and disability. People tend to be less physically active as they get older and levels of physical activity are generally lower among women than men. Physical activity levels are also lower among certain minority ethnic groups, among people from lower socioeconomic groups and among people with disabilities ('Start active, stay active').

Inactivity costs the NHS an estimated at £1.06 billion based on national cases of CHD, stroke, diabetes, colorectal cancer and breast cancer (all conditions that are potentially preventable or manageable through physical activity). This is a conservative estimate, given the exclusion of other health problems that physical activity can help manage and prevent. Examples include osteoporosis, falls and hypertension (Allender et al. 2007).

The total cost of inactivity further increases when considering the wider economic costs. These include sickness absence, estimated at £5.5 billion per year, and the premature death of productive people of working age from 'lifestyle-related' diseases, estimated at £1 billion per year (Ossa and

Hutton 2002). In 2008, the Department of Health's be active, be healthy plan estimated that the average cost of physical inactivity for every primary care trust (PCT) in England was £5 million.

In response to NICE public health guidance 2 (2006), which endorsed brief interventions in primary care to increase physical activity, the DH developed and launched the Department of Health's let's get moving national physical activity care pathway. This care pathway endorses use of the general practitioner physical activity questionnaire (GPPAQ) to identify inactive patients in primary care. It also includes a brief intervention based on the principles of motivational interviewing to help all those classified as less than active to change their behaviour.

Two additions to the hypertension quality outcomes framework (QOF) indicator set (HYP004 and HYP005) relate to physical activity (NHS Employers' 2013/14 general medical services contract: guidance and audit requirements for new and amended services). Both include the use of GPPAQ and assessment of physical activity levels in relation to hypertension in a programme aimed at the prevention of CVD (see the NHS Employers website for further information).

3 Considerations

Introduction

The Public Health Interventions Advisory Committee (PHIAC) took account of a number of factors and issues when developing the recommendations, as follows. Please note: this section does **not** contain recommendations.

Background

3.1 The recommendations have been made within the context of other national and local strategies and interventions to increase or maintain physical activity levels. Further, the availability of local opportunities to be active will influence whether brief advice leads to an increase or maintenance in people's physical activity.

3.2 PHIAC noted changes to the NHS and public health systems which came into force from April 2013, when local authorities took over responsibility for many public health interventions and services. Specifically, it noted that these changes may result in some uncertainty about who will coordinate and commission work in the immediate future.

3.3 PHIAC acknowledged and considered the 'making every contact count' (MECC) principle, as outlined at the 2012 NHS Future Forum, in developing this guidance. MECC suggests that by ensuring 'primary care professionals are appropriately trained and confident to make the most of opportunities with which to help people stay healthy', this will reduce system-wide costs to the NHS.

Quality and outcomes framework

3.4 PHIAC considered that physical activity could be more widely linked to the prevention or management of clinical conditions, through mechanisms such as the quality and outcomes framework (QOF). This approach would, it felt, be one way to raise the profile of physical activity among primary care practitioners. In turn, this may also encourage GPs to assess people's physical activity levels and give them brief advice.

Implementation, barriers and facilitators

3.5 PHIAC acknowledged that there is a need for all healthcare practitioners and policy makers to view the encouragement of physical activity as a normal, routine part of their practice.

3.6 PHIAC acknowledged that there are a number of competing demands on primary care practitioners' time, both generally and during patient appointments. The recommendations allow for practitioners to deliver very brief informal advice repeatedly, if this fits better with the time available.

3.7 PHIAC noted evidence that suggests brief advice could be delivered more quickly if the practitioner is knowledgeable about the benefits of (and opportunities for) physical activity. Evidence also points to the value of receiving training in delivering brief advice.

3.8 PHIAC acknowledged that some primary care practitioners do not talk to people about physical activity. This may be due to a number of reasons, for example, a lack of knowledge of the benefits or the types of activity they should be recommending. PHIAC acknowledged that the attitudes of both primary care practitioners and patients are important in determining whether a brief intervention is carried out and whether it has an effect.

3.9 PHIAC acknowledged that there may be fewer opportunities to be physically active in areas of high deprivation. This may be because of people's perceptions of personal safety locally or the location and accessibility of facilities such as parks and leisure centres. It could also be due to the lack of opportunities locally for example, the lack of activities such as organised walks and sports events.

3.10 PHIAC acknowledged that people with long-term conditions would usually benefit from physical activity, as it is an important independent and modifiable risk factor for numerous conditions.

3.11 PHIAC acknowledged that some people (such as those with a disability) may have fewer opportunities to be physically active than others. PHIAC recognised that adapting physical activity facilities or resources (as outlined in NICE's guideline on walking and cycling) is key to encouraging these groups to get involved. It also noted that knowledge of opportunities for such activity, for

example, knowledge of leisure centres that have facilities for people with a disability, is another example of how this could be achieved.

3.12 PHIAC noted concern from some stakeholders about the use of the general practitioner physical activity questionnaire (GPPAQ) for assessing physical activity levels. It acknowledged that a number of other methods could potentially be used, however, no evidence was available to consider these. PHIAC supported use of GPPAQ as a validated tool developed to support brief interventions. It also noted that training in the use of GPPAQ was available.

Evidence

3.13 The majority of studies are not from the UK. However, PHIAC considered that most of the evidence was sufficiently applicable to inform the recommendations.

3.14 PHIAC noted that brief advice has a modest, but consistent, effect on physical activity levels.

3.15 PHIAC considered that the evidence was insufficient to make recommendations about the differential impact of brief advice based on duration of delivery, content or by who delivers it.

3.16 There is a lack of evidence on the impact of the current infrastructure, processes and systems on both the delivery and uptake of brief advice. These include: the Department of Health's let's get moving national physical activity care pathway; and incentive systems such as QOF indicators HYP004 and HYP005.

Health economics

3.17 Data on the effectiveness of brief advice, compared with usual care (that is, not receiving brief advice), were specified in terms of the probability of moving from an inactive state to an active state 1 year later. PHIAC noted that the incremental cost-effectiveness ratio (ICER) of brief advice was £1,730, compared with usual care. Thus, brief advice can be considered cost effective. PHIAC thought this was a conservative estimate.

4 Recommendations for research

The Public Health Interventions Advisory Committee (PHIAC) recommends that the following research questions should be addressed. It notes that 'effectiveness' in this context relates not only to the size of the effect, but also to cost effectiveness and duration of effect. It also takes into account any harmful/negative side effects.

Where questions relate to the impact on physical activity, ideally this should be measured objectively as well as using self-reporting.

Where relevant, studies to answer the questions below should report the differential effectiveness according to, for example: gender, socioeconomic status, age and disability.

4.1 How does the duration and frequency of brief advice influence its effectiveness and cost effectiveness? For example, do 'micro interventions' of less than 1 to 2 minutes have an impact on physical activity?

4.2 What impact does brief advice to promote physical activity have on mental wellbeing?

4.3 What impact does the delivery of brief advice by different primary care practitioners – for example, GPs and practice nurses – have on physical activity? For example, is the perceived value of the information greater when provided by a particular primary care practitioner?

4.4 How do different types of training help primary care professionals identify people who are inactive and deliver brief advice? What type of training is most effective?

4.5 How can brief advice be tailored to have the greatest impact on specific groups? For example, can it be tailored to meet the needs of people of a particular gender, socioeconomic status or with a particular disability?

4.6 Do primary care practitioners use NICE guidance when encouraging people to be physically active?

4.7 Are the Department of Health's 'Let's get moving' physical activity care pathway

and the general practice physical activity questionnaire (GPPAQ) both commonly used in primary care? How do primary care practitioners view GPPAQ and, if they do not use it, why not?

4.8 What infrastructures and systems help increase the number of assessments of physical activity undertaken and the delivery of brief advice? (Examples studied could include integration of brief advice into long-term disease management strategies, or the use of incentive strategies.)

More detail identified during development of this guidance is provided in gaps in the evidence.

5 References

Allender S, Foster C, Scarborough P et al. (2007) The burden of physical activity-related ill health in the UK. Journal of Epidemiology and Community Health 61: 344–348

Khan KM, Weiler R, Blair SN (2011) Prescribing exercise in primary care. British Medical Journal 343: d4141

Ossa D, Hutton J (2002) The economic burden of physical inactivity in England. London: MEDTAP International

Rimer J, Dwan K, Lawlor DA et al. (2012) Exercise for depression. Cochrane Database Systematic Review 11 7: CD004366

Scarmeas N, Luchsinger JA, Schupf N et al. (2009) Physical activity, diet, and risk of Alzheimer's disease. Journal of the American Medical Association 302 (6): 627–37

Weiler R, Stamatakis E (2010) Physical activity in the UK: a unique crossroad? British Journal of Sports Medicine (44) 13: 912–914

6 Summary of the methods used to develop this guidance

Introduction

The reviews, primary research, commissioned reports and economic modelling report include full details of the methods used to select the evidence (including search strategies), assess its quality and summarise it.

The minutes of the Public Health Interventions Advisory Committee (PHIAC) meetings provide further detail about the Committee's interpretation of the evidence and development of the recommendations.

All supporting documents are listed in finding more information.

Key questions

The key questions were established as part of the scope. They formed the starting point for the reviews of evidence and were used by the PHIAC to help develop the recommendations. The overarching questions were

- Question 1: What types of brief advice are effective and cost effective in promoting physical activity in primary care? Does the method of delivery, type of advice and person delivering the advice influence the effectiveness and/or cost effectiveness of the intervention?
- Question 2: What type of local infrastructure and systems support effective and cost-effective delivery of brief advice on physical activity in primary care?
- Question 3: What are the barriers to, and facilitators for, the delivery of brief advice on physical activity in primary care?
- Question 4: What are the barriers to, and facilitators for, the uptake of brief advice on physical activity in primary care?

The subsidiary questions were:

1. What types of advice are given in the intervention?

2. What is the diversity of the population (for example, in terms of age, gender or ethnicity)?

3. What is the status of the person delivering the intervention and how is it delivered?

4. What are the content, frequency, length and duration of the intervention?

5. Under what circumstances are interventions delivered?

6. Are there any adverse or unintended effects?

7. What are the patient/public views of brief advice interventions offered in primary care to promote physical activity?

8. What are practitioner or expert views of brief advice interventions offered in primary care to promote physical activity?

9. What is the role of infrastructure and systems in facilitating interventions?

These questions were made more specific for each review (see reviews for this guideline for further details).

Reviewing the evidence

Effectiveness and barriers and facilitators mixed methods review

This review consisted of 2 components:

- Component 1 (Effectiveness) examined the effectiveness of brief advice in increasing physical activity in adults aged 19 and over. It also examined the effect of infrastructure and systems on increasing the delivery of brief advice.
- Component 2 (Barriers and facilitators) examined and identified factors that impact on the delivery and uptake of brief advice from both practitioner and patient perspectives.

The 2 components are presented in 1 report 'Physical activity: brief advice for adults in primary care'.

Identifying the evidence

A number of databases were searched in March 2012 for intervention studies and quantitative and qualitative evidence on barriers and facilitators, from 1990 to 2012. See the review for this guideline of effectiveness and barriers and facilitators for details of the databases searched and of the inclusion and exclusion criteria.

An initial search strategy was developed that included using categories of key words and subject terms. A focused search strategy of free text and subject heading terms was used, building on the search strategy for brief advice developed by the NICE Public Health Collaborating Centre for Physical Activity (2006). Terms were identified using concepts derived from the guidance scope.

Further iterations of this search strategy were developed based on the subsequent identification of relevant records. Iterations were repeated as new concepts were identified, within the time frame of the study.

Selection criteria

Studies were included in the review if:

- They covered adults aged 19 years and over. Papers with varying ages were considered provided the focus of the research was adults and not children or adolescents. Participating providers include all health professionals who are responsible for delivering primary care and including, but not restricted to, all those listed as examples in the scope (community nurses, GPs, health visitors, pharmacists, physiotherapists, exercise professionals, health trainers).
- They covered brief advice to promote physical activity.
- They considered either brief advice intervention effectiveness from patient and/or practitioner perspectives and/or barriers and facilitators to the delivery and/or uptake of brief advice from patient and/or practitioner perspectives.

Studies were excluded if:

- They covered children and young people aged 18 years and under.
- Interventions were offered outside of primary care or were not delivered by a primary care professional.

- Interventions were tailored for individuals with specific medical conditions (but not excluding interventions for individuals with risk factors for chronic conditions, for example hypertension, impaired glucose tolerance, obesity).
- They covered exercise referral schemes offering an assessment of need, development of a tailored physical activity programme, monitoring and follow-up (see NICE's guideline on exercise referral schemes for recommendations on exercise referral).
- They covered schemes that encourage physical activity – for example walking and cycling schemes (see NICE's guideline on walking and cycling).

As the review was a mixed methods review containing both effectiveness and barriers and facilitators components, the inclusion and exclusion criteria for each review varied and details can be found at 'Physical activity: brief advice for adults in primary care'.

Quality appraisal

Included papers were assessed for methodological rigour and quality using the NICE methodology checklist. Each study was graded (++, +, –) to reflect the risk of potential bias arising from its design and execution.

Study quality

++ All or most of the checklist criteria have been fulfilled. Where they have not been fulfilled, the conclusions are very unlikely to alter.

+ Some of the checklist criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are unlikely to alter the conclusions.

– Few or no checklist criteria have been fulfilled. The conclusions of the study are likely or very likely to alter.

The evidence was also assessed for its applicability to the areas (populations, settings, interventions) covered by the scope of the guidance. Each evidence statement concludes with a statement of applicability (directly applicable, partially applicable, not applicable).

Summarising the evidence and making evidence statements

The review data was summarised in evidence tables (see the reviews for this guideline).

The findings from the review were synthesised and used as the basis for a number of evidence statements relating to each key question. The evidence statements were prepared by the external contractors/public health collaborating centres (see finding more information). The statements reflect their judgement of the strength (quality, quantity and consistency) of evidence and its applicability to the populations and settings in the scope.

Cost effectiveness

There was a review of economic evaluations and an economic modelling exercise.

Review of economic evaluations

A database search strategy for MEDLINE and EMBASE was developed using the search strategy for the effectiveness review that had been developed by the effectiveness review team and agreed with NICE. Search terms derived from NHS EED (a database of economic evaluations) were added to identify papers relevant to the economic evaluation.

Further search strategies for additional databases specific to the economic evidence review were adapted from terms used in the MEDLINE and EMBASE strategies. Searches were limited to papers reported in English and published between 1990 and March/April 2012.

Studies were included if they focused on 'full economic evaluations' (that consider costs and health/non-health consequences) of relevant types of intervention or scheme, and high quality costing studies conducted in the UK or OECD countries. Studies were excluded if they focused on burden of disease and non-comparative costing studies, or other studies which do not involve assessing the cost and related benefits/effectiveness of relevant interventions. Studies were categorised according to study type and methodological rigour and quality. Quality ratings for studies are:

++ All or most of the checklist criteria have been fulfilled. Where they have not been fulfilled, the conclusions are very unlikely to alter.

+ Some of the checklist criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are unlikely to alter the conclusions.

– Few or no checklist criteria have been fulfilled. The conclusions of the study are likely or very likely to alter.

Review of economic barriers and facilitators

The search strategy for the economic barriers and facilitators review was based on past search strategies and studies around demand for physical activity (Anokye 2010; Harland et al. 1999) in conjunction with the search strategy developed for the effectiveness review. The search for evidence was based on 10 electronic databases, additional papers supplied by NICE and the effectiveness review team, a call for evidence distributed by NICE, a Google Scholar search of citations and a search of 6 organisational websites. Searches were limited to papers reported in English and published between 1990 and March/April 2012.

Studies were included if they covered:

- Quantitative estimates of the statistical association (for example, correlation or regression coefficient) between uptake of/adherence to brief advice interventions and economic variables such as income, employment status, demographics, money/time costs, tastes and preferences.
- Qualitative data (for example, focus groups and interviews with brief intervention participants) about the economic factors relating to uptake of and adherence to brief interventions.

Studies were excluded if they did not involve examining the barriers to uptake and delivery of relevant interventions, or studies that were not conducted in the UK or OECD countries. Quality ratings of included studies were undertaken as per methods outlined by NICE (2009) 'Methods for the development of NICE public health guidance' (second edition).

Economic modelling

A number of assumptions were made which could underestimate or overestimate the cost effectiveness of the interventions (see the review modelling report for this guideline for further details).

An economic model was constructed to incorporate data from the reviews of effectiveness and cost effectiveness.

A Markov model considered a cohort of sedentary, healthy individuals over their remaining lifetime to estimate the costs and benefits of a cohort exposed to brief advice (in the first year of cycle only) compared with a cohort not exposed to brief advice (usual care).

People exposed to brief advice were assumed to have a greater probability of becoming 'physically active'. States were defined in line with existing evidence on the relative risks for developing coronary heart disease (both non-fatal and fatal), or stroke (both non-fatal and fatal), or type 2 diabetes.

The analysis adopted a lifetime horizon, an NHS/Personal Social Service perspective and discounted quality-adjusted life years (QALY) as a key outcome.

A series of sensitivity analyses was undertaken to explore the potential effects of study design and risk of bias on pooled outcomes. In addition, cost-consequence analysis was performed to include a broader range of benefits and dis-benefits associated with brief advice and physical activity. This used data from the cost-utility model, effectiveness review and an update of the previous literature search.

The results are reported in the economic modelling report for this guideline.

How PHIAC formulated the recommendations

At its meetings in September 2012 the Public Health Interventions Advisory Committee (PHIAC) considered the evidence and cost effectiveness to determine:

- whether there was sufficient evidence (in terms of strength and applicability) to form a judgement
- where relevant, whether (on balance) the evidence demonstrates that the intervention or programme/activity can be effective or is inconclusive
- where relevant, the typical size of effect (where there is one)
- whether the evidence is applicable to the target groups and context covered by the guidance.

PHIAC developed draft recommendations through informal consensus, based on the following criteria:

- Strength (type, quality, quantity and consistency) of the evidence.
- The applicability of the evidence to the populations/settings referred to in the scope.
- Effect size and potential impact on the target population's health.
- Impact on inequalities in health between different groups of the population.

- Equality and diversity legislation.
- Ethical issues and social value judgements.
- Cost effectiveness (for the NHS and other public sector organisations).
- Balance of harms and benefits.
- Ease of implementation and any anticipated changes in practice.

Where possible, recommendations were linked to evidence statements (see the evidence documents for this guideline for details). Where a recommendation was inferred from the evidence, this was indicated by the reference 'IDE' (inference derived from the evidence).

7 The evidence

This section lists the evidence statements from the review provided by external contractors and links them to the relevant recommendations.

The evidence that Public Health Interventions Advisory Committee (PHIAC) considered included:

Evidence review

The review of effectiveness and barriers and facilitators was carried out by The University of Sheffield/School of Health and Related Research (ScHARR). The principal authors were: Campbell F, Blank L, Messina J, Day M, Buckley Wood H, Payne N, Goyder E and Armitage C.

Cost effectiveness

The review of economic evaluations and the review of economic barriers and facilitators were carried out by Brunel University London/Health Economics Research Group (HERG). The principal authors for both reviews were Anokye N, Jones T and Fox-Rushby J.

The economic modelling was carried out by Brunel University London/Health Economics Research Group (HERG). The principal authors were Anokye N, Jones T and Fox-Rushby J.

In some cases the evidence was insufficient and PHIAC has made recommendations for future research.

See summary of the methods used to develop this guidance for the key to quality assessments.

This section also sets out a brief summary of findings from the economic analysis.

The evidence statements are short summaries of evidence in a review. Each statement has a short code indicating which document the evidence has come from. The letters in the code refer to the type of document the statement is from, and the numbers refer to the document number, and the number of the evidence statement in the document.

Evidence statement number PA8 indicates that the linked statement is numbered 8 in the review 'Physical activity: brief advice for adults in primary care'.

The review and economic analysis for this guideline are available.

Where a recommendation is not directly taken from the evidence statements, but is inferred from the evidence, this is indicated by **IDE** (inference derived from the evidence).

Recommendation 1: evidence statements PA8, PA9, PA12, PA16, PA20; IDE

Recommendation 2: evidence statements PA1, PA8, PA9, PA16, PA18, PA19, PA20; IDE

Recommendation 3: evidence statements PA12, PA15, PA16, PA23, PA25, PA30; IDE

Recommendation 4: evidence statements PA11, PA16, PA23, PA27, PA30; IDE

Recommendation 5: evidence statements PA8, PA9, PA10, PA12, PA13, PA15, PA23, PA26, PA28, PA29, PA30

Evidence statements

Please note that the wording of some evidence statements has been altered slightly from those in the evidence reviews to make them more consistent with each other and NICE's standard house style.

Evidence statement PA1

Moderate evidence from 15 studies; 4 nRCTs (4 [−][2,3,14,15]), 4 cluster RCTs (2[++][4,5], 1 [+][6] and 1 [-][7]) and 7 RCTs (1 [++][8] 4 [+][1,10,11,12] , 2 [−][9,13]) suggests that there is an increase in the self-reported physical activity levels in those participants who received brief advice, or who were seen by primary care professionals trained to deliver brief advice.

1 Bull et al. 1998 ([+] Australia)

2 Calfas et al. 1996 ([−] USA)

3 Marcus et al. 1997 ([−USA)

4 Elley et al. 2003 ([++] New Zealand)

5 Grandes et al. 2009 ([++] Spain)

6 Goldstein et al. 1999 ([+] USA)

7 Marshall et al. 2005 ([−] Australia)

8 Petrella et al. 2003 ([++] Canada)

9 Hillsdon et al. 2002 ([−] UK)

10 Harland et al. 1999 ([+] UK)

11 Halbert et al. 2000 ([+] Australia)

12 Little et al. 2004 ([+] UK)

13 Lewis et al. 1993 ([−] USA)

14 Smith et al. 2000 ([−] Australia)

15 Naylor et al. 1990 ([−] UK)

Evidence statement PA8

Moderate evidence from 5 studies; 2 qualitative (1 [++][1] and 1 [+][2]) and 3 quantitative studies (all [+][3,4,5]), suggests that perceived patient characteristics affect a practitioner's decision to discuss and/or prescribe physical activity.

1 Ampt et al. 2009 ([++] Australia)

2 Melillio et al. 2000 ([+] USA)

3 Booth et al. 2006 ([+] Australia)

4 Kreutzer et al. 1997 ([+] USA)

5 Royals et al. 1996 ([+] USA)

Evidence statement PA9

Moderate evidence from 18 studies; 8 qualitative (3 [++][1,7,8], 4 [+][11,12,17,18] and 1 [−][8]) and 10

quantitative studies (all [+][2,3,4,5,6,10,13,14,15,16]) suggests that perceived likely uptake of advice, motivation to change, and receptiveness affects a practitioner's decision to discuss and/or prescribe physical activity. Practitioners are more likely to provide brief physical activity advice to patients who they perceive are most likely to act on the advice given.

1 Ampt et al. 2009 ([++] Australia)

2 Bize et al. 2007 ([+]Switzerland)

3 Bull et al. 1995 ([+] Australia)

4 Bull et al. 1997([+] Australia)

5 Buchholz et al. 2007 ([+] USA)

6 Burns et al. 2000 ([+] USA)

7 Douglas et al. 2006a ([++] UK)

8 Douglas et al. 2006b (([++] UK)

9 Gould et al. 1995 ([−] UK)

10 Heintze et al. 2010 ([+] Germany)

11 Horsley Tompkins et al. 2009 ([+] USA)

12 Huang et al. 2004 ([+] USA)

13 Kennedy et al. 2003 ([+] Canada)

14 Kreuter et al. 1997 ([+] USA)

15 Lawlor et al. 1999 ([+]UK)

16 Long et al. 1996 ([+] USA)

17 Walsh et al. 1999 ([+], USA)

18 Winzenberg et al. 2009 ([+] Australia)

Evidence statement PA10

Moderate evidence from 8 studies; 5 qualitative (1 [++][2], 3 [+][4,7,8] and 1 [−][6]) and 3 quantitative studies (all [+][1,3,5]) suggests that practitioner behaviour is influenced by perceived evidence for effectiveness of physical activity advice as well as the perceived effectiveness of physical activity to improve health. Practitioners who believe that physical activity improves health are more likely to deliver brief physical activity advice.

1 Bull et al. 1995 ([+] Australia)

2 Douglas et al. 2006a ([++] UK)

3 Horsley Tompkins et al. 2009 ([+] USA)

4 Huang et al. 2004 ([+] USA)

5 Kennedy et al. 2003 ([+] Canada)

6 Swinburn et al. 1997 ([−] New Zealand)

7 Ribera et al. 2005 ([+] Spain)

8 Winzenberg et al. 2009 ([+] Australia)

Evidence statement PA11

Moderate evidence from 12 studies: 7 qualitative (3 [++][1,6,7], and 4 [+][2,8,11,12]) and 5 quantitative studies (all [+][3,4,5,9,10]) suggests that practitioners consider a lack of provision of print materials, incentives, or other support resources to be a barrier to discussing and/or prescribing physical activity. It may be that better provision of print materials to hand out to patients, financial reward for providing brief physical activity advice or addition provision of other support recourses would increase the delivery of brief physical activity advice.

1 Ampt et al. 2009 ([++] Australia)

2 Bize et al. 2007 ([+] Switzerland)

3 Bull et al. 1995 ([+] Australia)

4 Bull et al. 1997([+] Australia)

5 Burns et al. 2000)[+] USA)

6 Douglas et al. 2006a ([++] UK)

7 Douglas et al. 2006b ([++] UK)

8 Huang et al. 2004 ([+] USA)

9 Long et al. 1996 ([+] USA)

10 McDowell et al. 1997 ([+] UK)

11 Pinto et al. 1998 ([+] UK)

12 Ribera et al. 2005 ([+] Spain)

Evidence statement PA12

Moderate evidence from 19 papers; 9 qualitative (2 [++][7,8] [+][2,9,14,15,16,19] and 1 [–][17]), 9 quantitative studies (all [+][1,3,4,5,6,10,11,12,13]), and 1 mixed methods evaluation [+][18] suggests that practitioners considered that time resources and conflicting priorities affected their ability to discuss and/or prescribe physical activity. Time acts as a 'proxy' for related factors such as increased workload, resulting in conflicting priorities and a need to choose between physical activity promotion and other factors which may be seen as more central to the practitioner role.

1 Albright et al. 2000 ([+] USA)

2 Bize et al. 2007 ([+]Switzerland)

3 Bull et al. 1995 ([+] Australia)

4 Bull et al. 2010 ([+] UK)

5 Buchholz et al. 2007 ([+] USA)

6 Burns et al. 2000 ([+] USA)

7 Douglas et al. 2006a ([++] UK)

8 Douglas et al. 2006b ([++] UK)

9 Huang et al. 2004 ([+] USA)

10 Kennedy et al. 2003 ([+] Canada)

11 Lawlor et al. 1999 ([+] UK)

12 Long et al. 1996 ([+] USA)

13 McKenna et al. 1998 ([+] UK)

14 Melillo et al. 2000 ([+] USA)

15 Patel et al. 2011 ([+] UK)

16 Ribera et al. 2005 ([+] Spain)

17 Swinburn et al. 1997 ([−] New Zealand)

18 Van Sluijs et al. 2004 ([+] Netherlands)

19 Winzenberg et al. 2009 ([+] Australia)

Evidence statement PA13

Moderate evidence from 18 studies; 9 qualitative (one [++][1], 7 [+][7,8,9,12,14,15,16] and 1 [−][3]) and 9 quantitative studies (all [+][2,3,4,5,6,10,12,17,18]) suggests that practitioner confidence and knowledge (including the need for further training/support) affected their ability to discuss and/or prescribe physical activity. Greater practitioner confidence/knowledge (created through better training) increases the likelihood of delivery brief advice.

1 Ampt et al. 2009 ([++] Australia)

2 Buchholz et al. 2007 ([+] USA)

3 Buffart et al. 2012 ([+] Australia)

4 Bull et al. 1995 ([+] Australia)

5 Bull et al.1997([+] Australia)

6 Burns et al. 2000 ([+]USA)

7 Douglas et al. 2006a ([++] UK)

8 Douglas et al. 2006b ([++] UK)

9 Eadie et al. 1996 ([+], Qualitative, UK)

10 Gould et al. 1995 ([−] UK)

11 Gribben et al. 2000 ([+] New Zealand)

12 Huang et al. 2004 ([+] USA)

13 Kennedy et al. 2003 ([+] Canada)

14 Pinto et al. 1998 ([+] UK)

15 Ribera et al. 2005 ([+] Spain)

16 Sims et al. 2004 [+] (Australia)

17 Van der Ploeg et al. 2007([+] Australia)

18 Walsh et al. 1999 ([+] USA)

Evidence statement PA15

Moderate evidence from 6 studies; 2 qualitative (all [++][4,5]) and 4 quantitative studies (all [+][1,2,3,6]), suggests that practitioner willingness to discuss and/or prescribe physical activity was influenced

by whether they perceived this activity to be within their remit/role. Those who saw physical activity promotion as within their role were more likely to provide brief physical activity advice.

1 Booth et al. 2006 ([+] Australia)

2 Buffart et al. 2012 ([+] Australia)

3 Bull et al. 1995 ([+] Australia)

4 Douglas et al. 2006a ([++] UK)

5 Douglas et al. 2006b ([++] UK)

6 Van der Ploeg et al. 2007 ([+] Australia)

Evidence statement PA16

Moderate evidence from 18 studies; 11 qualitative (3 [++][1,4,5] 6 [+][2,11,13,14,15,18] and 2 [−][6,17]) and 7 quantitative studies (all [+][3,7,8,9,10,12,16]), suggests that practitioners were more willing to discuss and/or prescribed physical activity where this was linked to the presenting condition (rather than as a preventative measure), that is to provide curative rather than preventative advice.

1 Ampt et al. 2009 ([++] Australia)

2 Bize et al. 2007 ([+] Qualitative, Switzerland)

3 Bull et al. 1995 ([+] Australia)

4 Douglas et al. 2006a ([++] UK)

5 Douglas et al. 2006b ([++] UK)

6 Gould et al. 1995 ([−] UK)

7 Gribben et al. 2000 ([+] New Zealand)

8 Horsley Tompkins et al. 2009 ([+] USA)

9 Kreuter et al. 1997 ([+] USA)

10 Lawlor et al. 1999 ([+]UK)

11 Leijon et al. 2010 ([+] Sweden)

12 McDowell et al. 1997 ([+] UK)

13 Melillo et al. 2000 ([+] USA)

14 Patel et al. 2011 ([+] UK)

15 Ribera et al. 2005 ([+] Spain)

16 Schmid et al. 2009 ([+] Switzerland)

17 Swinburn et al. 1997 ([−] New Zealand)

18 Winzenberg et al. 2009 ([+] Australia)

Evidence statement PA18

Moderate evidence from 4 qualitative studies (all [+][1,2,3,4]) suggests that patient willingness to comply with brief physical activity advice is affected by their recall and understanding of advice. Patients who understand the advice are more likely to comply with it.

1 Huang et al. 2004 ([+] USA)

2 Ribera et al. 2006 ([+] Spain)

3 Pinto et al. 1998 ([+] UK)

4 Sims et al. 2004 ([+] Australia)

Evidence statement PA19

Moderate evidence from 1 qualitative study (all [+][1]), suggests that patients felt they needed to receive more preventative advice (that is, advice not linked to a presenting condition).

1 Horne et al. 2010 ([+] UK)

Evidence statement PA20

Moderate evidence from 2 qualitative studies (all [+][1,2]) suggests that patients were less receptive to brief physical activity advice if they were unaware of physical activity recommendations. Making patients aware of physical activity recommendations would increase their willingness to comply with brief physical activity advice.

1 Horne et al. 2010 ([+] UK)

2 Sims et al. 2004 ([+] Australia)

Evidence statement PA23

Moderate evidence from 10 studies; 5 qualitative (4 [+][3,5,7,8], and 1 [−][9]), 3 quantitative (all [+][1,2,4]), and 2 mixed methods studies (all [+][6,10]), suggests that interventions to encourage practitioners to administer brief physical activity advice can be effective in improving practitioners' views of brief physical activity advice, which may lead to positive effects on patients' physical activity behaviours.

1 Albright et al. 2000 ([+] USA)

2 Booth et al. 2006 ([+] Australia)

3 Bull et al. 2010 ([+] UK)

4 Gribben et al. 2000 ([+] New Zealand)

5 Leijon et al. 2010 ([+] Sweden)

6 Long et al. 1996 ([+] USA)

7 Patel et al. 2011 ([+] UK)

8 Pinto et al. 1998 ([+] UK)

9 Swinburn et al. 1997 ([−] New Zealand)

10 Van Sluijs et al. 2004 ([+] Netherlands)

Evidence statement PA25

Moderate evidence from 14 studies; 7 effectiveness studies (2 [++][1,3] 3 [+][4,9,13] and 2 [−])[10,12], and 7 barriers and facilitators studies (1 [++][7], 5 [+][2,5,6,11,14] and 1 [-][8]), suggests that the provision of incentives to encourage practitioners to administer brief physical activity advice or provision of incentives to patients to encourage them to act on brief physical activity advice may overcome barriers to delivery/uptake but this cannot be validated through the effectiveness evidence.

1 ACT 2001 ([++] Australia)

2 Bize et al. 2007 ([+] Switzerland)

3 Bolognesi et al. 2006 ([++] Italy

4 Bull et al. 1998 ([+] Australia)

5 Bull et al. 1995 ([+] Australia)

6 Burns et al. 2000 ([+]USA)

7 Douglas et al. 2006a ([++] UK)

8 Gould et al. 1995 ([−] UK)

9 Harland et al. 1999 ([+] UK)

10 Lewis 1993 ([−] USA)

11 McDowell et al. 1997 ([+] UK)

12 Naylor et al. 1999 ([− UK)

13 Pinto et al. 2005 ([+] USA)

14 Ribera et al. 2005 ([+] Spain)

Evidence statement PA26

Moderate evidence from 23 studies; 9 effectiveness studies (5 [++][2,9,12,19,20] 2 [+][4,10], and 2 [−][16,17]),

and 14 barriers and facilitators studies (1[++][1], and 13 [+][3,5,6,7,8,11,13,14,15,16,21,22,23]) suggests that the provision of training may encourage practitioners to administer brief physical activity advice and that the education of patients may encourage them to act on brief physical advice. In particular this may be effective in improving intervention outcomes in populations where this knowledge is found to be lacking.

1 Ampt et al. 2009 ([++] Australia)

2 Bolognesi et al. 2006 ([++] Italy)

3 Buchholz et al. 2007 ([+] USA)

4 Bull et al.1998 ([+] Australia)

5 Burns et al.2000 ([+]USA)

6 Douglas et al. 2006a ([++] UK)

7 Douglas et al. 2006b ([++] UK)

8 Eadie et al.1996 ([+] UK)

9 Elley et al. 2003 ([++] New Zealand)

10 Goldstein et al. 1999 ([+] USA)

11 Goodman et al. 2011 ([+] UK)

12 Grandes et al. 2009 ([++] Spain)

13 Horne et al. 2010 ([+] UK)

14 Huang et al. 2004 ([+] USA)

15 Kennedy et al. 2003 ([+] Canada)

16 Lewis et al. 1993 ([−] USA)

17 Marcus et al. 1997 ([−] USA)

18 McDowell et al. 1997 ([+] UK)

19 Petrella et al. 2003 ([++] Canada)

20 Pinto et al. 2005 ([+] USA)

21 Ribera et al. 2006 ([+] Spain)

22 Sims 2004 ([+] Australia)

23 Walsh et al. 1999 ([+] USA)

Evidence statement PA27

Moderate evidence from 22 studies; 11 effectiveness studies (3 [++][1,9,10],4 [+][4,18,21,22] and 4 [−][12,14,15,17]), and 11 barriers and facilitators studies (3 [++][2,7,8] and 8 [+][3,5,6,11,13,16,19,20]), suggests no benefit from the addition of written support materials to a brief advice intervention. However, it may be that the quality of currently available materials needs to improve to see an effect.

1 ACT 2001 ([++] Australia)

2 Ampt et al. 2009 ([++] Australia)

3 Bize et al. 2007 ([+]Switzerland)

4 Bull et al. 1998 ([+] Australia)

5 Bull et al. 1995 ([+] Australia)

6 Burns et al. 2000 ([+]USA)

7 Douglas et al. 2006a ([++] UK)

8 Douglas et al. 2006b ([++] UK)

9 Elley et al. 2003 ([++] New Zealand)

10 Grandes et al. 2009 ([++] Spain)

11 Huang et al. 2004 ([+] USA)

12 Little et al. 2004 ([-] UK)

13 Long et al. 1996 ([+] USA)

14 Marcus et al. 1997 ([−] USA)

15 Marshall et al. 2005 ([−] Australia)

16 McDowell et al. 1997 ([+] UK)

17 Naylor 1999 ([−] UK)

18 Pfeiffer et al. 2001([+] USA)

19 Pinto et al. 1998 ([+] UK)

20 Ribera et al. 2005 ([+] Spain)

21 Smith et al. 2000 ([+] Australia)

22 Swinburn et al. 1998 ([+] New Zealand)

Evidence statement PA28

Moderate evidence from 18 studies; 9 effectiveness studies (2 [++][6,9], 4 [+][3,8,10,11] and 3 [-][5,13,15]), and 9 barriers and facilitators studies (8[+][1,2,4,7,12,14,16,17] and 1 [−][18]), suggests that whilst the evidence of relative effectiveness for brief interventions of 5 minutes or longer versus interventions of very short duration (less than 5 minutes) is inconclusive, structured interventions can help to overcome practitioner barriers to prescribing brief advice.

1 Albright et al. 2000 ([+] (USA)

2 Booth et al. 2006 ([+] Australia)

3 Bull et al. 1998 ([+] Australia)

4 Bull et al. 2010 ([+] UK)

5 Calfas et al. 1996 ([−] USA)

6 Elley et al. 2003 ([++] New Zealand)

7 Gribben et al. 2000 ([+] New Zealand)

8 Goldstein et al. 1999 ([+] USA)

9 Grandes et al. 2009 ([++] Spain)

10 Halbert et al. 2000 ([+] Australia)

11 Hillsdon et al. 2002 ([+] UK)

12 Leijon et al. 2010 ([+] Sweden)

13 Lewis et al. 1993 ([−] USA)

14.Long et al. 1996 ([+] USA)

15 Marcus et al. 1997 ([−] USA)

16 Patel et al. 2011 ([+] UK)

17 Pinto et al. 1998 ([+] UK)

18 Swinburn et al. 1997 ([−] New Zealand)

Evidence statement PA29

Moderate evidence from 7 barriers and facilitators studies (2 [++][1,2], 4 [+][3,4,5,6], and 1 [−][7]), suggests that time constraints resulted from conflicting priorities, and unfavourable working conditions. It seems likely that practitioners report lack of time as a proxy for a wide range of barriers to delivering brief physical activity advice and that overcoming problems such as lack of training,

knowledge and confidence could act to remove the perceived barrier of lack of time.

1 Douglas et al. 2006a ([++] UK)

2 Douglas et al. 2006b ([++] UK)

3 Huang et al. 2004 ([+] USA)

4 McKenna et al. 1998 ([+] UK)

5 Patel et al. 2011 ([+] UK)

6 Ribera et al. 2005 ([+] Spain)

7 Swinburn et al. 1997 ([−] New Zealand)

Evidence statement PA30

Moderate evidence from 1 effectiveness ([−][6]), and 8 barriers and facilitators studies (1 [++][2], and 7 [+][1,3,4,5,6,7,8]), suggests that the structure of the actual 'system' in which the intervention is delivered has the potential to affect both the effectiveness of the intervention and its acceptability to both patients and practitioners. It is important to note that all the structural factors outlined here need to be considered together rather than in isolation to facilitate positive changes in intervention delivery and physical activity uptake.

1 Bize et al. 2007 ([+] Switzerland)

2 Douglas et al. 2006b ([++] UK)

3 Gribben et al. 2000 ([+] New Zealand)

4 Leijon et al. 2010 ([+] Sweden)

5 Long et al. 1996 ([+] USA)

6 Marcus et al. 1997 ([−] USA)

7 McDowell et al. 1997 ([+] UK)

8 Pinto et al. 1998 ([+] UK)

9 Walsh et al. 1999 ([+] USA)

Cost effectiveness

There was a review of economic evaluations, a review of economic barriers and facilitators and an economic modelling exercise.

Review of economic evaluations

Three papers were reviewed, 2 of which were based on a UK and an Australian population. The only overlap with previous economic literature influencing public health guidance in this area was the cost-effectiveness model developed for the previous NICE guidance (Matrix 2006).

Moderate, but limited evidence from 3 studies suggested that brief advice on physical activity in primary care is more cost effective than usual care. The evidence should be interpreted with caution as the evidence based on effectiveness was weak and did not fully explore uncertainty. Therefore, a de novo modelling of the cost effectiveness of brief advice was needed to improve knowledge on its efficiency.

Review of economic barriers and facilitators

Six papers were reviewed: 5 quantitative studies from the USA and 1 qualitative study from New Zealand.

Poor quality evidence suggested that a perceived lack of adequate financial incentive for healthcare professionals is a barrier to the delivery of brief advice on physical activity in primary care. This was irrespective of whether the advice was provided by a nurse or GP.

Moderate evidence suggested a weakly positive correlation between the time spent on (or available for) counselling and the delivery of brief advice on physical activity in primary care, regardless of whether it was provided by a GP or nurse. There was no interpretable policy-relevant evidence on the role of remuneration in the delivery of brief advice on physical activity. There was no interpretable evidence on the role of other resources in the delivery of brief advice on physical activity.

Economic modelling

A number of assumptions were made which could underestimate or overestimate the cost effectiveness of the interventions (see the economic modelling report for this guideline for the full modelling report and further details of the results).

The analysis adopted a lifetime horizon, an NHS/Personal Social Service perspective and discounted quality-adjusted life years (QALY) as a key outcome. Uncertainty over the model results was estimated by deterministic sensitivity analysis, scenario analysis, and probabilistic sensitivity analysis. Deterministic analysis was used to estimate the impact of alternative model scenarios. Compared with usual care, the incremental cost-effectiveness ratio (ICER) of brief advice was £1730 and thus can be considered cost effective.

When brief advice was compared with usual care (the 'base case'), uncertainties were explored through a series of analyses. In most cases the base case results were robust, but they were sensitive to the duration of protective effects of physical activity, mental health gains from physical activity, changes in infrastructure and age of cohort.

The impact of changing the age at which physical activity started, post-brief advice, to 54 years and older resulted in brief advice being cheaper and more effective compared with usual care (this is termed as brief advice 'dominating' usual care). Thus, the strength of the cost-effectiveness results was even greater for people aged 54 years and older. Uncertainty over the model results was estimated by probabilistic sensitivity analysis. Probabilistic sensitivity analysis showed a 99.9% chance that brief advice will be cost effective if an additional QALY is valued at £20,000.

While the economic model was based on the previous economic model (Matrix 2006) used to support developing NICE public health guidance 2, this model offered a number of improvements including:

1) time-based modelling

2) mental health and wellbeing as well as infrastructure (considered where permitted by the evidence)

3) more extensive exploration of uncertainty around the ICERs

4) more conservative assumptions around changes in physical activity over time

5) use of meta-analysed effectiveness data.

Overall, brief physical activity advice in primary was found to be cost effective.

8 Gaps in the evidence

The Public Health Interventions Advisory Committee (PHIAC) identified a number of gaps in the evidence related to the programmes under examination based on an assessment of the evidence and stakeholder comments. These gaps are set out below.

1. Whether practitioners are more likely to give brief advice if it can be delivered effectively in less than a few minutes.

2. The effectiveness of differing durations of brief advice on physical activity levels.

3. What information should be provided (or not provided) when delivering brief advice.

4. What infrastructure and systems are effective in increasing delivery – for example, whether the use of incentives increases the number of brief interventions carried out by practitioners.

5. The impact of brief advice in increasing physical activity levels, as quantified by objective measures and in comparison with self-reported measures.

6. Whether any specific, or combination of, behaviour-change techniques should be used to deliver brief advice.

7. Whether practitioner knowledge and motivation have an impact on the delivery of brief advice.

8. Whether brief advice is more effective when delivered as the opportunity arises, or during an appointment made specifically for the task.

9. The effectiveness and cost effectiveness of brief advice in increasing physical activity levels among identified groups at risk of health conditions due to inactivity. This includes, for example, people with disabilities, those aged 65 and over, and people with a lower socioeconomic status. In other words, whether tailoring brief advice by population group is more effective than giving generic advice.

10. Barriers to, and facilitators for, increasing physical activity levels in response to brief advice.

11. The effectiveness of specific brief advice interventions (in terms of frequency, intensity and duration) and maintenance of behaviour change in the longer term

12. A comparison of the relative effectiveness of brief advice for physical activity in the general population compared with a sedentary population.

13. Whether there is a differential effect of different durations and frequency of follow-up on the effectiveness of brief advice to increase physical activity.

14. Current level of use of the original brief intervention recommendations from NICE public health guidance 2, general practice physical activity questionnaire (GPPAQ) and the 'Let's get moving' physical activity care pathway.

The Committee made a number of recommendations for research into areas that it believes will be a priority for developing future guidance. These are listed in recommendations for research.

9 Membership of the Public Health Interventions Advisory Committee (PHIAC) and the NICE project team

Public Health Interventions Advisory Committee

NICE has set up a standing committee, the Public Health Interventions Advisory Committee (PHIAC), which reviews the evidence and develops recommendations on public health interventions. Membership of PHIAC is multidisciplinary, comprising public health practitioners, clinicians, local authority officers, teachers, social care professionals, representatives of the public, academics and technical experts as follows.

John F Barker
Interim Children's Services Manager; Assistant Director of e-Government, IdEA; Programme Coordinator, Better Government for Older People, Deputy Director of Social Services, Solihull Metropolitan Borough Council

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Finding more information

You can see everything NICE says on this topic in the NICE Pathway on physical activity.

To find NICE guidance on related topics, including guidance in development, see the NICE webpage on physical activity.

For full details of the evidence and the guideline committee's discussions, see the evidence reviews. You can also find information about how the guideline was developed.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

Update information

August 2020: in box 1, the definition of physical activity and information about national recommendations were updated in line with the 2019 UK Chief Medical Officers' physical activity guidelines.

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