NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

PUBLIC HEALTH DRAFT GUIDANCE

Physical activity: brief advice for adults in primary care

Introduction: scope and purpose of this draft guidance

What is this guidance about?

This guidance is a partial update of 'Four commonly used methods to increase physical activity', NICE public health guidance 2 (2006). It aims to provide greater detail than NICE public health guidance 2 on how brief advice on physical activity can be incorporated more routinely into primary care than is currently the case. Additionally, the recommendations focus on the role of local infrastructure and systems in supporting the delivery of brief advice. The draft recommendations cover:

- identifying adults who are inactive
- delivering brief advice
- identifying motivational factors and tailoring brief advice
- recording outcomes and following up brief advice
- commissioning to support delivery of brief advice
- improving practitioners' knowledge.

The recommendations in the final guidance will supersede recommendations 1–4 in 'Four commonly used methods to increase physical activity', NICE public health guidance 2.

The recommendation from NICE public health guidance 2 relating to pedometers and walking and cycling schemes (recommendation 6) has been superseded by NICE guidance on 'Walking and cycling'.

NICE has recently decided to update its guidance on exercise referral schemes from NICE public health guidance 2 (recommendation 5) and this work is being taken forward separately.

Who is this guidance for?

This guidance update is for primary care practitioners and those working in primary care settings, for example, community nurses, exercise professionals, GPs, health trainers and pharmacists. It may also be of interest to commissioners of health services, those with a role in the promotion of physical activity and members of the public.

Why is this guidance being produced?

In 2005, the Department of Health (DH) asked the National Institute for Health and Clinical Excellence (NICE) to produce guidance on 'Four commonly used methods to increase physical activity' and NICE public health guidance 2 was published the following year.

Following a review of the guidance in 2009, NICE decided to update the 'brief interventions in primary care' recommendations[1].

The guidance should be implemented alongside other guidance and regulations (for more details see sections 4 and 7 on implementation and related NICE guidance respectively).

How was this guidance developed?

The recommendations are based on the best available evidence. They were developed by the Public Health Interventions Advisory Committee (PHIAC).

Members of PHIAC are listed in appendix A.

The guidance was developed using the NICE public health intervention process. See appendix B for details.

[1] For further details on the review decision, visit www.nice.org.uk/guidance/PH2

Supporting documents used to prepare this document are listed in appendix E.

What evidence is the guidance based on?

The evidence that PHIAC considered included reviews of the evidence, economic modelling, and the testimony of expert witnesses. Further detail on the evidence is given in the considerations section (section 3) and appendices B and C.

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

More details of the evidence on which this guidance is based, and NICE's processes for developing public health guidance, are on the NICE website.

Status of this guidance

This is **draft** guidance.

This document does not include all sections that will appear in the final guidance. NICE is now inviting comments from stakeholders (listed on our website).

Note that this document is not NICE's formal guidance on physical activity: brief advice for adults in primary care**. The recommendations made in section 1 are provisional and may change after consultation with stakeholders.**

The stages NICE will follow after consultation are summarised below.

- The Committee will meet again to consider the comments, reports and any additional evidence that has been submitted.
- After that meeting, the Committee will produce a second draft of the guidance.
- The draft guidance will be signed off by the NICE Guidance Executive.

For further details, see 'The NICE public health guidance development process: An overview for stakeholders including public health practitioners, policy makers and the public (second edition, 2009)'.

The key dates are:

Closing date for comments: 23rd January 2013.

Next PHIAC meeting: 15th February 2013.

Contents

Introduction: scope and purpose of this draft guidance 1
Contents 5
1 Draft recommendations 6
2 Public health need and practice 15
3 Considerations 18
4 Implementation 22
5 Recommendations for research 23
6 Updating the recommendations 24
7 Related NICE guidance 24
8 References 25
Appendix A Membership of the Public Health Interventions Advisory Committee (PHIAC), the NICE project team and external contractors 27
Appendix B Summary of the methods used to develop this guidance 30
Appendix C The evidence 40
Appendix D Gaps in the evidence 59
Appendix E Supporting documents 61

1 Draft recommendations

Introduction

The Public Health Interventions Advisory Committee (PHIAC) considers that the recommended approaches are cost effective.

The evidence statements underpinning the recommendations are listed in appendix C.

The recommendations in this guidance reflect the evidence identified and the discussions of PHIAC. For some approaches, there was no evidence and their absence should not be taken as a judgement on whether they are effective or cost effective. For the research recommendations and gaps in research, see section 5 and appendix D respectively.

The evidence reviews, supporting evidence statements and economic modelling report are available at the NICE website.

Background

The recommendations have been made within the context of other 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 (see 'Physical activity and the environment', NICE public health guidance 8 [2008]) or other measures to support an active lifestyle (see 'Walking and cycling', NICE public health guidance, publication expected November 2012). The availability of local opportunities to be active will influence whether brief advice leads to an increase or maintenance in people's physical activity.

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.

Infrastructure and systems

Infrastructure and systems that facilitate the delivery of brief advice in primary care settings include structured arrangements such as scheduled health checks, checks of disease registers, long-term disease management plans, 'triggers' in computerised patient records, and incentive schemes for professionals.

Current physical activity recommendations

The Chief Medical Officers' current recommendations for physical activity (see UK physical activity guidelines) state that all adults aged 19 years and over should aim to be active daily. Over a week, this should add up to at least 150 minutes (2.5 hours) of moderate intensity[2] physical activity in bouts of 10 minutes or more. One way to approach this is to do 30 minutes of physical activity on at least 5 days a week. Alternatively, comparable benefits can be achieved through 75 minutes of vigorous intensity[3] activity spread across the week or combinations of moderate and vigorous intensity activity. All adults should also undertake physical activity to improve muscle strength on at least 2 days a week. They should minimise the amount of time spent being sedentary (sitting) for extended periods. Older adults (65 years and over) who are at risk of falls should incorporate physical activity to improve balance and coordination on at least 2 days a week. Individual physical and mental capabilities should be considered when interpreting the guidelines, but the key issue is that some activity is better than no activity. For more information, see UK physical activity guidelines.

General practice physical activity questionnaire (GPPAQ)

The general practice physical activity questionnaire (GPPAQ) is an example of a validated questionnaire for assessing a person's current level of physical activity. It is intended to be used with adults (aged 16–74 years) in routine

[2] Moderate-intensity physical activity leads to faster breathing, increased heart rate and feeling warmer. Moderate-intensity physical activity could include walking at 3–4 mph, and household tasks such as vacuum cleaning or mowing the lawn.

[3] Vigorous-intensity physical activity leads to very hard breathing, shortness of breath, rapid heartbeat and should leave a person unable to maintain a conversation comfortably. Vigorous-intensity activity could include running at 6–8 mph, cycling at 12–14 mph or swimming slow crawl (50 yards per minute).

general practice to provide a simple, 4-level physical activity index (PAI) reflecting their current physical activity level. The index can be cross-referred to 'Read Codes'[4] for physical activity and can be used to help inform whether interventions to increase physical activity (such as brief advice) might be appropriate. See guidance on using GPPAQ.

Whose health will benefit?

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

Recommendation 1 Identifying adults who are inactive

Who should take action?

Primary care practitioners, including:

- Practice nurses.
- GPs.
- Other primary care practitioners, for example pharmacists.

What action should they take?

- Assess the physical activity levels of all adults in contact with primary care services and identify those who are not currently meeting the UK physical activity guidelines. This could be done:
  - opportunistically during a consultation with a GP or practice nurse (or while people are waiting)
  - as part of a planned session on management of long-term conditions run by a practice nurse
  - as part of a consultation with a pharmacist.

- Use professional judgement to identify when this assessment would be most appropriate, for example when someone is presenting with a

[4] Read Codes is the standard clinical terminology system used in general practice in the UK. It supports detailed clinical encoding of patient information, including: occupation; social circumstances; clinical signs, symptoms and observations; laboratory tests and results; diagnoses; diagnostic, therapeutic or surgical procedures performed; and a variety of administrative items (such as whether a screening recall has been sent and by what method of communication).

condition that would benefit from physical activity. If it is not appropriate in the current consultation, carry out the assessment at the next available opportunity.

- Do not rely on visual cues (for example, body weight) to determine whether people are physically active. Use validated assessment tools such as GPPAQ.

- Take care to remain sensitive to people's overall circumstances when assessing their activity and discussing with them the outcomes of the assessment.

- Encourage people who are assessed as being physically active and meeting the UK physical activity guidelines to maintain their level of activity.

- For people who are assessed as being inactive, identify the most appropriate time to discuss physical activity. This might be in the current consultation or in a later consultation, and might involve referral to another member of the primary care team. If it is in a later consultation, make sure it occurs at the earliest opportunity and ensure that the person, at the minimum, leaves the initial session aware of the health benefits of activity.

- Record the outcomes of the physical activity assessment (if using GPPAQ enter the Read Codes).

Recommendation 2 Delivering brief advice

Who should take action?

Primary care practitioners, including:

- Practice nurses.
- GPs.
- Other primary care practitioners, for example pharmacists.

What action should they take?

- Discuss physical activity with adults who are assessed as being inactive and advise them to increase their level of activity with the aim of achieving the UK physical activity guidelines.

- When delivering brief advice, emphasise:

  - the protective effect of meeting the UK physical activity guidelines and highlight inactivity as an independent modifiable risk factor for a range of conditions such as cardiovascular disease, type 2 diabetes, stroke, mental health and wellbeing, and some cancers
  - that the UK physical activity guidelines can be achieved in short bouts of up to 10 minutes per session and can be a mixture of moderate and vigorous activity
  - that some physical activity is better than no activity, and that people can gradually increase their activity levels to achieve the UK physical activity guidelines
  - that physical activity can be integrated into everyday activities such as walking and cycling (see 'Walking and cycling', NICE public health guidance, publication expected November 2012).

Recommendation 3 Identifying motivational factors and tailoring brief advice

Who should take action?

Primary care practitioners, including:

- Practice nurses.
- GPs.
- Other primary care practitioners, for example pharmacists.

What action should they take?

- Use behaviour change techniques to identify individual motivational factors and set personal physical activity goals (see 'Behaviour change', NICE public health guidance 6).

- When delivering brief advice, tailor it to:

  - people's current level of activity
  - people's overall circumstances, their preferences and their barriers to activity – for example, it could include incorporating brisk walking into everyday routines, such as walking instead of using the car or bus for journeys of less than a mile or using the stairs instead of the lift (see 'Walking and cycling', NICE public health guidance, publication expected November 2012)
  - individual motivations and personal goals
  - emphasise the beneficial effects of physical activity on a recent diagnosis of a condition or pre-condition (where relevant).

- Give people information about relevant local opportunities to be physically active (for example, see Sport England's Active Places website), taking into account individual motivational factors and physical activity goals.

- Consider giving a written 'prescription' of the advice and/or what goals have been agreed.

Recommendation 4 Recording outcomes and following up brief advice

Who should take action?

Primary care practitioners, including:

- Practice nurses.
- GPs.
- Other primary care practitioners, for example pharmacists.

What action should they take?

- Record the outcomes of the advice given (if GPPAQ is used, enter the Read Codes). Use this information to follow up progress towards physical activity goals at the person's next appointment or at another identified opportunity.

- Follow up brief advice opportunistically at another appointment or in a planned appointment about physical activity or about an identified long-term condition affected by physical activity. This follow-up could consist of:

  - a very brief conversation about physical activity undertaken or progress towards achieving the UK physical activity guidelines
  - a brief reminder of the outcomes and goals set as part of the brief advice given at the previous appointment, and discussing progress towards these goals.

Recommendation 5 Commissioning to support delivery of brief advice

Who should take action?

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

What action should they take?

- When commissioning services that have an impact on conditions in which physical activity has a role in prevention or management (for example, cardiovascular disease, type 2 diabetes, stroke and mental health), ensure that brief advice on physical activity is incorporated into the care pathway.

- Ensure that brief advice on physical activity is incorporated into services for populations at particular risk of inactivity, including people aged 65 years and over, people with disabilities and certain minority ethnic groups.

- Include strategies to commission physical activity assessment and brief advice delivery in the achievement of Domain 2 of the Public Health

Outcomes Framework 'Proportion of physically active and inactive adults' indicator.

- Ensure that assessment of physical activity and delivery of brief advice (see recommendations 1 and 2) are built into the local long-term disease management strategy. The strategy should highlight physical activity as an independent modifiable risk factor in the prevention and management of a number of long-term conditions (see UK physical activity guidelines). It should also raise awareness of physical activity assessment as part of the Quality and Outcomes Framework (QOF) indicator PP2 and QOF menu indicators NM36 and NM37.

- Ensure that systems such as Read Codes are being used to identify opportunities to assess people's physical activity and deliver brief advice. These could include at appointments, or when practice nurses are reviewing disease registers for appointments to discuss long-term disease management.

- Ensure that systems are in place to record the outcomes of physical activity assessments and brief advice delivered (see recommendation 4).

Recommendation 6 Improving practitioners' knowledge

Who should take action?

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

What action should they take?

- Provide information and training for practitioners that covers:
  - the groups at particular risk of inactivity (see recommendation 5)
  - misconceptions about who needs to increase their physical activity (based, for example, on visual cues such as body weight)
  - the benefits of physical activity
  - physical activity promotion as being within the remit of the primary care practitioner

- 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.
- how to undertake physical activity assessments
- local opportunities for physical activity
- delivery of brief advice, for example, the skills to motivate people (see 'Behaviour change', NICE public health guidance 6).

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 over 20 conditions and diseases including coronary heart disease (CHD), cancer, diabetes, musculoskeletal disorders and obesity (Department of Health 2011a).

One in 4 people will experience some form of mental health problem in the course of a year (Mental Health Foundation 2011). Physical activity can help prevent and alleviate problems such as clinical depression, dementia (Laurin et al. 2001) and Alzheimer's (Scarmeas et al. 2009). It may even be as successful as psychotherapy or medication in treating clinical depression (Lawlor and Hopler 2001). Physical activity also has a role in enhancing psychological wellbeing by improving mood, self-perception, self-esteem and reducing stress.

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 (The Health and Social Care Information Centre 2011a)[5].

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 (Department of Health 2011a).

[5] 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 (Department of Health 2011).

Inactivity costs the NHS an estimated at £1.06 billion based on national cases of CHD, stroke, diabetes, colorectal cancer and breast cancer (all potentially preventable or manageable through physical activity). This is a conservative estimate given the exclusion of other health problems that can be exacerbated through lack of physical activity, for example, 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). The 'Be active, be healthy' plan (DH 2009b) estimates the healthcare cost of physical inactivity for every primary care trust (PCT) in England, with the average estimated cost being £5 million per PCT.

There is limited information about current practice, but one study suggests that doctors should first encourage patients to adopt a healthy lifestyle and then help them to maintain it when helping people with a 'lifestyle-related' disease (Khan et al. 2011). Despite the benefits of physical activity and NICE guidance on brief advice in primary care[6], the systematic use of brief advice on physical activity is not universal. Weiler and Stamatakis (2010) note that: 'despite physical inactivity being the most prevalent, modifiable affliction and possibly the greatest chronic disease risk factor, it is still not receiving the attention that scientific and clinical evidence would seem to merit'.

In response to NICE public health guidance 2 (2006) endorsing brief interventions in primary care to increase physical activity, the DH developed and launched the 'Let's get moving' physical activity care pathway (DH 2009a) as a means of providing advice on physical activity in primary care. This care pathway endorsed the use of the general practitioner physical activity questionnaire (GPPAQ) to screen patients for inactivity. It then offers a brief intervention based on the principles of motivational interviewing to assist behaviour change in all those classified as less than active.

[6] See 'Four commonly used methods to increase physical activity' NICE public health guidance 2.

In August 2011 there were 2 additions to the cardiovascular disease (CVD) quality outcomes framework (QOF) menu of indicators (NM36 and NM37) (The Health and Social Care Information Centre 2011b). Both additions relate to the use of GPPAQ and assessment of physical activity levels in relation to hypertension in a programme aimed at the primary prevention of CVD (NICE 2011).

3 Considerations

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 in the population. 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.

Quality and Outcomes Framework (QOF)

3.2 PHIAC agreed that specific QOF indicators for physical activity advice would be likely to encourage GPs to increase the assessment of people's physical activity and the delivery of brief advice in primary care. PHIAC considered that linking physical activity to the prevention or management of clinical conditions through items such QOF would be one way to raise the profile of physical activity among primary care practitioners.

Implementation, barriers and facilitators

3.3 PHIAC acknowledged that there are a number of competing demands on primary care practitioners' time, both generally and during patient appointments. PHIAC agreed that physical activity advice, however brief, is beneficial and so the recommendations allow for practitioners to deliver very brief informal advice repeatedly if this fits better with the time available. PHIAC also noted that the evidence suggests that advice could be delivered more quickly if the practitioner is knowledgeable about the benefits of (and opportunities for) physical activity and has received training in techniques for delivering brief advice.

3.4 In the development of recommendations, PHIAC acknowledged that people with long-term conditions would usually benefit from

physical activity, and that practitioners need to tailor physical activity advice to clinical severity and other needs of the patient.

3.5 PHIAC acknowledged that some primary care practitioners do not engage with people about their physical activity status for a number of reasons. PHIAC considered that: physical activity is an important independent modifiable risk factor for numerous conditions; primary care practitioners have an important role in primary prevention and physical activity promotion; and physical activity assessment and delivery of advice should be a matter of routine in primary care.

3.6 PHIAC acknowledged that in the assessment of physical activity and the delivery of brief advice on physical activity, the attitudes of both primary care practitioners and patients are important in determining whether the intervention is carried out and whether it has an effect.

3.7 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 in their local environment, the location and accessibility of local facilities such as parks and leisure centres, and the availability of local physical activity opportunities such as organised walks and sports events.

Evidence

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

3.9 PHIAC noted that brief advice has a modest but consistent effect in increasing physical activity and is cost effective compared with usual practice. PHIAC acknowledged that the effectiveness and cost effectiveness of brief advice in primary care to increase physical activity were conservative estimates and may therefore be underestimations.

3.10 PHIAC considered that the evidence was insufficient to make recommendations about the differential impact of the duration of brief advice, the specific content of brief advice and who delivers it.

3.11 PHIAC recognised the lack of evidence on the impact of infrastructure and systems on both the delivery and uptake of brief advice. PHIAC is aware of a number of current infrastructure and systems policies and processes, such as the national physical activity care pathway 'Let's get moving' (DH 2009); incentivisation systems such as QOF indicator PP2; and QOF menu indicators NM36 and NM37. All of these seek to facilitate the assessment of physical activity using validated questions (for example, the general practice physical activity questionnaire [GPPAQ]) and/or the delivery of brief advice based on this assessment. PHIAC is also aware that the current version of the Read Code system includes codes which categorise a person's physical activity status (as defined by GPPAQ) to audit and monitor people through physical activity assessment and brief advice delivery. On this basis, PHIAC has made recommendations encouraging awareness raising, use and further development of infrastructures and systems.

Health economics

3.12 PHIAC noted that the economic modelling showed the incremental cost-effectiveness ratio (ICER) of brief advice to be £1,730 compared with usual care. Thus, delivery of brief advice on physical activity can be considered cost effective.

3.13 PHIAC recognised the lack of evidence on the impact of brief advice on mental health and wellbeing. This aspect was considered in the economic modelling exercise. The assumption in the modelling was that physical activity is an established factor in increasing mental health and wellbeing.

3.14 PHIAC noted that when short-term mental health gains associated with physical activity were excluded, the ICER was £27,000 per

QALY gained. PHIAC also noted that the available evidence was mostly self-reported. However, PHIAC agreed that people who are physically active are more likely to experience mental health and wellbeing benefit from physical activity than people who are inactive. PHIAC noted that there was a 99.9% chance that brief advice would be cost effective in the probabilistic sensitivity analysis if an additional QALY was valued at £20,000.

This section will be completed in the final document.

4 Implementation

NICE guidance can help:

- Commissioners and providers of services in NHS organisations, social care and children's services to meet national priorities and the requirements of the DH's Operating framework for 2012/13.
- National and local organisations improve quality and health outcomes and reduce health inequalities.
- Local authorities improve the health and wellbeing of people in their area.
- Local NHS organisations, local authorities and other local partners benefit from any identified cost savings, disinvestment opportunities or opportunities for redirecting resources.
- Provide a focus for integration and partnership working across social care, the NHS and public health organisations.

NICE will develop tools to help organisations put this guidance into practice. Details will be available on our website after the guidance has been issued.

5 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.

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

5.1 How do the duration and frequency of brief advice influence the effectiveness and cost effectiveness of delivering brief advice on physical activity? For example, do 'micro interventions' of less than 1–2 minutes lead to increased physical activity? How does this affect physical activity levels measured through objective measures?

5.2 To what extent does brief advice to promote physical activity influence mental wellbeing?

5.3 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? What is the effect of this as measured by objective measures?

5.4 What infrastructures and systems (for example, integrating brief advice into long-term disease management strategies or incentivisation/remuneration strategies) lead to increased assessment of physical activity and delivery of brief advice?

5.5 Do primary care practitioners use NICE guidance (for example NICE public health guidance 2) in the promotion of physical activity?

5.6 How commonly used are the Department of Health's 'Let's get moving' physical activity care pathway and the general practice physical activity questionnaire (GPPAQ) in primary care? What are primary care practitioners' views on the usefulness and ease of use of, and the barriers and facilitators to, GPPAQ?

6 Updating the recommendations

This section will be completed in the final document.

7 Related NICE guidance

Published

Preventing type 2 diabetes: risk identification and interventions for high risk individuals. NICE public health guidance 38 (2012)

Preventing type 2 diabetes – population and community interventions. NICE public health guidance 35 (2011)

Weight management before, during and after pregnancy. NICE public health guidance 27 (2010)

Prevention of cardiovascular disease. NICE public health guidance 25 (2010)

Mental wellbeing and older people. NICE public health guidance 16 (2008)

Identifying and supporting people most at risk of dying prematurely. NICE public health guidance 15 (2008)

Promoting physical activity in the workplace. NICE public health guidance 13 (2008)

Physical activity and the environment. NICE public health guidance 8 (2008)

Behaviour change. NICE public health guidance 6 (2007)

Obesity. NICE clinical guideline 43 (2006)

Four commonly used methods to increase physical activity. NICE public health guidance 2 (2006)

Under development

Walking and cycling. NICE public health guidance (publication expected November 2012)

Obesity: working with local communities. NICE public health guidance (publication expected November 2012)

BMI and waist circumference – black, Asian and minority ethnic groups. NICE public health guidance (publication expected June 2013)

Overweight and obese adults: lifestyle weight management. NICE public health guidance (publication expected May 2014)

8 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

Department of Health (2009a) Let's get moving: Commissioning guidance. A new physical activity care pathway for the NHS. London: Department of Health

Department of Health (2009b) Be active, be healthy: a plan for getting the nation moving. London: HMS Government.

Department of Health (2011a) Start active, stay active: A report on physical activity for health from the four home counties' Chief Medical Officers [online]

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

Laurin D, Verreault R, Lindsay J et al. (2001) Physical activity and risk of cognitive impairment and dementia in elderly persons. Archives of Neurology 58: 498–504

Lawlor DA, Hopler SW (2001) The effectiveness of exercise as an intervention in the management of depression: systematic review and meta-regression analysis of randomised controlled trials. British Medical Journal 322: 1–8

Mental Health Foundation (2011) Governance [online]

NHS Future Forum (2012) Summary report – second phase [online]

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

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): 627–637

The Health and Social Care Information Centre (2011a) Statistics on obesity, physical activity and diet: England, 2011 [online]

The Health and Social Care Information Centre (2011b) Quality outcomes frameworks online GP practice database [online]

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

Appendix A Membership of the Public Health Interventions Advisory Committee (PHIAC), the NICE project team and external contractors

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 Co-coordinator, Better Government for Older People, Deputy Director of Social Services, Solihull Metropolitan Borough Council

Sarah Byford Professor of Health Economics, Centre for the Economics of Mental and Physical Health, Institute of Psychiatry, King's College London

K K Cheng Professor of Public Health and Primary Care, University of Birmingham

Joanne Cooke Programme Manager, Collaboration and Leadership in Applied Health Research and Care for South Yorkshire

Philip Cutler Project Coordinator, Bradford Alliance on Community Care

Lesley Michele de Meza Personal, Social, Health and Economic (PSHE) Education Consultant, Trainer and Writer

Ruth Hall Public Health Consultant

Amanda Hoey Director, Consumer Health Consulting Limited

Ann Hoskins Director, Children, Young People and Maternity, NHS North West

Muriel James Chair, King Edward Road Surgery Patient Participation Group

Matt Kearney General Practitioner, Castlefields, Runcorn and Primary Care and Public Health Adviser, Department of Health

CHAIR Catherine Law Professor of Public Health and Epidemiology, University College London Institute of Child Health

David McDaid Research Fellow, Department of Health and Social Care, London School of Economics and Political Science

Bren McInerney Community Member

John Macleod Chair in Clinical Epidemiology and Primary Care, School of Social and Community Medicine, University of Bristol; Honorary Clinical Consultant in Primary Care, NHS Bristol; GP, Hartcliffe Health Centre, Bristol

Susan Michie Professor of Health Psychology, British Psychological Society Centre for Outcomes Research and Effectiveness, University College London

Stephen Morris Professor of Health Economics, Department of Epidemiology and Public Health, University College London

Toby Prevost Professor of Medical Statistics, Department of Primary care and Public Health Sciences, King's College London

Jane Putsey Lay Member. Registered with the Breastfeeding Network

Mike Rayner Director, British Heart Foundation Health Promotion Research Group, Department of Public Health, University of Oxford

Dale Robinson Chartered Environmental Health Practitioner; Director, Dr Resolutions Limited

Joyce Rothschild Education Consultant

Kamran Siddiqi Clinical Senior Lecturer and Consultant in Public Health, Leeds Institute of Health Sciences and NHS Leeds

David Sloan Retired Director of Public Health

Stephanie Taylor Professor of Public Health and Primary Care, Centre for Health Sciences, Barts and The London School of Medicine and Dentistry

Stephen Walters Professor in Medical Statistics and Clinical Trials, University of Sheffield

Expert co-optees to PHIAC:

Lewis Jones Healthy Weight Coordinator, NHS Cornwall & Isles of Scilly PCT

Expert testimony to PHIAC:

Kim Buxton Assistant Director – Project Manager Primary Care, British Heart Foundation National Centre for Physical Activity and Health

Esther Van Sluijs MRC Group Leader, MRC Epidemiology Unit & UKCRC Centre for Diet and Activity Research

NICE project team

Mike Kelly CPHE Director

Simon Ellis Associate Director

James Jagroo Lead Analyst

Hugo Crombie Analyst

Kim Jeong Technical Adviser Health Economics

Victoria Axe Project Manager

Rukshana Begum Coordinator

Sarah Catchpole Senior Editor

External contractors

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.

Appendix B Summary of the methods used to develop this guidance

Introduction

The reviews 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 appendix E and are available at the NICE website

Guidance development

The stages involved in developing public health programme guidance are outlined in the box below.

1. Draft scope released for consultation

2. Stakeholder comments used to revise the scope

3. Final scope and responses to comments published on website

4. Evidence reviews and economic modelling undertaken and submitted to PHIAC

5. PHIAC produces draft recommendations

6. Draft guidance (and evidence) released for consultation

7. PHIAC amends recommendations

8. Final guidance published on website

9. Responses to comments published on website

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 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 further details).

Reviewing the evidence

Effectiveness and barriers and facilitators mixed methods review

This review consisted of two components:

1) 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.

2) 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 two components are presented in one 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 details of the databases searched.

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 'Four commonly used methods to increase physical activity', NICE public health guidance 2 for a recommendation on exercise referral).
- They covered schemes that encourage physical activity – for example walking and cycling schemes (see 'Walking and cycling', NICE public health guidance, publication expected November 2012)

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'.

See each review for details of the inclusion and exclusion criteria.

Quality appraisal

Included papers were assessed for methodological rigour and quality using the NICE methodology checklist, as set out in the NICE technical manual 'Methods for the development of NICE public health guidance' (see appendix E). 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 full reviews).

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 (see appendix A). 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

Assessment of cost effectiveness consisted of 3 components: a review of economic evaluation, a review of economic barriers and facilitators, and a review of economic modelling.

Review of economic evaluation

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 economic modelling report 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). Those 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 using data from the cost-utility model, effectiveness review, and updating the previous literature search.

The results are reported in the economic modelling report – see appendix E.

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 an evidence statement(s) (see appendix C for details). Where a recommendation was inferred from the evidence, this was indicated by the reference 'IDE' (inference derived from the evidence).

Appendix C The evidence

Introduction

This appendix lists the evidence statements from the review provided by the external contractor (see appendix A and appendix E) and links them to the relevant recommendations. See appendix B for the meaning of the (++), (+) and (-) quality assessments referred to in the evidence statements.

Appendix C also sets out a brief summary of findings from the economic analysis.

The evidence statements are short summaries of evidence, in a review, report or paper (provided by an expert in the topic area). Each statement has a short code indicating which document the evidence has come from. The letter(s) 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 are available at the NICE website 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, IDE

Recommendation 2: evidence statements PA1, PA12, PA16, PA18, PA19, PA20

Recommendation 3: evidence statements PA2, PA6, PA11, PA16, PA21, PA24, PA28, PA30

Recommendation 4: evidence statements IDE

Recommendation 5: evidence statements PA12, PA16, PA19, PA20, PA23, PA25, PA30, IDE

Recommendation 6: evidence statements PA15, PA16, PA19, PA29, PA30

Recommendation 7: evidence statements PA8, PA9, PA10, PA12, PA13, PA15, PA16, PA18, PA19, PA20, PA23, PA26,

Recommendation 8: evidence statements PA8, PA9, PA10, PA12, PA13, PA15, PA16, PA23, PA26, PA29, PA30

Evidence statements

Please note that the wording of some evidence statements has been altered slightly from those in the evidence review to make them more consistent with each other and NICE's standard house style. The superscript numbers refer to the studies cited beneath each statement. The full references for those studies can be found in the review. Please also note that the evidence statements below represent the key findings only and that the full evidence statement can be found in the review.

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 PA2

Moderate evidence from 5 studies, 5 RCTs (1 [++][1], 3 [+][4,3,2], 1 [-][5]) suggests that increasing the intensity of the brief advice intervention has no additional benefit in terms of increasing self-reported physical activity. The additional use of behavioural counselling, additional written materials, vouchers, and methods of feedback did not appear to increase the effects of brief advice.

1 ACT 2001 ([++] Australia)

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

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

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

5 Jimmy et al. 2005 ([-] Switzerland)

Evidence statement PA6

Moderate evidence from 4 studies; 3 RCTs (3[+][1,2,4]), and 1 nRCT([-][3]) suggests that there is no additional benefit in combining brief advice with written materials.

1 Little 2004 ([+] UK)

2 Pfieffer 2001 ([+] USA)

3 Smith 2000 ([-] Australia)

4 Swinburn 1998 ([+] New Zealand)

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 PA21

Moderate evidence from 1 qualitative study (all [+][1]), suggests that older adult patients need to feel listened to in order to benefit from brief physical activity advice.

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

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 PA24

Evidence from an analysis of the behaviour change techniques (BCTs) incorporated in 20 studies (4 [++][1,5,6,17] 9 [+][2,7,8,9,10,13,18,19,20] 7 [-][3,4,11,12,14,15,16]) shows that the most common BCTs used in brief advice interventions on physical activity in primary care are:

- prompt intention formation
- providing information on consequences
- providing general information on behaviour links
- use of follow-up or prompts
- prompt specific goal setting.

1 ACT trial 2001([++])

2 Bolognesi 2006 ([+])

3 Bull 1998 ([-])

4 Calfas 1996 ([-])

5 Elley 2003 ([++])

6 Grandes (2009) ([++])

7 Goldstein 1999 ([+])

8 Harland 1999 ([+])

9 Halbert 2000 ([+])

10 Hillsdon 2002 ([+])

11 Jimmy 2005 ([-])

12 Lewis 1993 ([-])

13 Little 2004 ([+])

14 Marcus 1997 ([-])

15 Marshall 2004 ([-])

16 Naylor 1999 ([-])

17 Petrella 2003 ([++])

18 Pfeiffer 2001 ([+])

19 Smith 2000 ([+])

20 Swinburn 1998 ([+])

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 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 economic modelling report for further details).

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 £1,730 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.

Cost–consequence analysis of brief advice was undertaken in order to provide greater detail in reporting outcomes in which disaggregated costs and benefits were summarised. The findings of the cost–consequence analysis confirmed that delivering brief advice will cost the NHS £950,000 in the first year with corresponding benefits including an additional 6,994 people becoming physically active at year 1; averting 2.4 events of coronary heart disease, 1.8 events of stroke and 3.1 events of diabetes and preventing 1 death in 10 years. As a result there is a gain of 442 QALYs over 10 years.

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.

Full modelling report and results are reported in the economic modelling report – see appendix E.

Appendix D 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 and expert comment. 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. Current level of use of the original brief intervention recommendations from NICE public health guidance 2, and use of GPPAQ and the 'Let's get moving' physical activity care pathway.

5. What infrastructure and systems are effective in increasing delivery – for example, would incentivisation increase delivery by practitioners?

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

7. Whether any specific or combination of behaviour change techniques should be utilised when delivering brief advice.

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

9. The effectiveness and cost effectiveness of brief advice in increasing physical activity in identified key at-risk groups, for example, people with disabilities, those aged 65 and over, and people with a lower socioeconomic status – for example, does tailoring brief advice by

population group increase physical activity in comparison to generic brief advice?

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

11. The clinical effectiveness of specific brief advice interventions and maintenance of behaviour change in the longer term

12. Barriers to and facilitators of people increasing their physical activity in response to brief advice.

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. Whether brief advice is more effective when delivered opportunistically or through a planned appointment.

Appendix E Supporting documents

Supporting documents include the following:

- Evidence review:
  - 'Physical activity: brief advice for adults in primary care'
- Economic analysis:
  - 'Brief advice for adults in primary care: review of economic barriers and facilitators'
  - 'Brief advice for adults in primary care: review of the economic evidence'
  - 'Brief advice for adults in primary care: economic modelling of brief advice on physical activity for adults in primary care'

For information on how NICE public health guidance is developed, see:

- 'Methods for development of NICE public health guidance (second edition, 2009)'
- 'The NICE public health guidance development process: An overview for stakeholders including public health practitioners, policy makers and the public (second edition, 2009)'