

# The effectiveness and cost effectiveness of ways to help older workers plan and prepare for retirement

## Evidence Review for Research Question 2

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IES project code: 3469

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## Executive Summary

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The National Institute for Health and Care Excellence (NICE) has been asked by the Department of Health to develop public health guidance for employers and employees on effective and cost effective ways of promoting and protecting the health of older workers, covering workplace adaptations and adjustments to their changing needs in order to extend working lives and prepare for retirement.

The Institute for Employment Studies (IES) in partnership with The Work Foundation (TWF), Lancaster University, York Health Economics Consortium (YHEC), and Loughborough University (LU) have been contracted to undertake the evidence reviews of relevant effectiveness and qualitative studies and the economic analysis.

Three research questions were developed and following the search process, evidence has been found to address Research Questions 1 and 3:

- ‘What are the most effective and cost-effective methods of protecting and promoting the health and wellbeing of older workers, and of supporting workers who wish to continue in employment up to and beyond state pensionable age? What supports, or prevents, implementation of these methods?’ (RQ 1)
- ‘What factors facilitate or constrain workplaces to enhance the wellbeing of older workers, to support them in continuing to work up to and beyond state pensionable age and affect the quality and outcomes of pre-retirement planning?’ (RQ3)

No evidence was found to address Research Question 2:

- What are the most effective and cost-effective ways of helping older workers plan and prepare for retirement? What supports, or prevents, implementation of these methods?

This report presents the second of three reviews based on effectiveness studies which examined workplace policies and practices on pre-retirement planning. The first review examined workplace policies and practices to protect and promote the health and wellbeing of older workers, and supporting workers who wish to

continue in employment up to and beyond state pensionable age. A subsequent qualitative review will examine factors that support and constrain organisational capability in relation to all three research questions.

It was agreed with NICE project team at the outset that a joint search strategy would be adopted for all three research questions which would cover:

- A search of key literature databases
- A search of the websites of relevant organisations
- Citation searches of material included in the reviews
- A review of material submitted through the two NICE Calls for Evidence
- Writing to any known researchers and experts in the field not already contacted during the two Calls for Evidence to ask for relevant material.
- All the papers were reviewed against inclusion and exclusion criteria agreed with the NICE project team. Included studies were those that had an experimental or observational design, were published in English since 2005, set in an OECD country including European countries which acceded to membership of the EU on or before 2004, which examined a workplace intervention, policy or practice aimed at supporting retirement protecting and promoting the health and wellbeing of workers aged at least 50. Interventions or support that employees access on their own, statutory provision or interventions to promote physical activity, mental wellbeing and smoking cessation in the workplace, and to manage sickness absence were excluded. Managing long-term sickness absence, promotion of physical activity and smoking cessation are already covered by existing NICE guidance.

The 27,738 titles and abstracts identified through the initial search process were screened through a two-stage process to identify papers that should be considered for full paper screening, using a checklist based on the inclusion/exclusion criteria. Articles were identified at this stage as being relevant for Review Question 1, 2 or 3.

The full papers of all the studies that came through the initial screening process were ordered. Retrieved papers were appraised by two members of the review team using the full inclusion/exclusion checklist to assess the content of the articles and whether they should be included in the review (see Appendix 3).

The 14 papers identified for full paper screening for Review Question 2 have been screened and extracted. During the screening process no papers were identified for inclusion in this review.

## Findings

The absence of studies directly addressing the research question focussed on interventions which are effective and cost-effective ways of helping older workers

plan and prepare for retirement conducted through longitudinal methods or involving controlled trials indicates an acute lack of research in this area. This absence may reflect the treatment of retirement planning as a personal and individual activity by some employers. To address the lack of evidence, policy bodies should commission high quality research in this area, ideally designed to track the impact of such interventions to the end of working life and beyond into retirement, since impacts are likely both to develop and accumulate over a substantial period of time.

# 1 Introduction

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The National Institute for Health and Care Excellence (NICE) has been asked by the Department of Health to develop public health guidance for employers and employees on effective and cost effective ways of promoting and protecting the health of older workers, covering workplace adaptations and adjustments to their changing needs in order to extend working lives and prepare for retirement. As part of the process of developing the guidance, NICE has commissioned a series of evidence reviews and an economic evaluation.

The Institute for Employment Studies (IES) in partnership with The Work Foundation (TWF), Lancaster University, York Health Economics Consortium (YHEC), and Loughborough University (LU) have been contracted to undertake the evidence reviews of relevant effectiveness and qualitative studies and the economic analysis.

This report presents the first of these reviews based on effectiveness studies which examined workplace policies and practices to protect and promote the health and wellbeing of older workers, and of support workers who wish to continue in employment up to and beyond state pensionable age. Subsequent reviews will cover the effectiveness of workplace policies and practices on pre-retirement planning and a qualitative review of studies which examine the factors affecting the health and well-being of older workers, both in work and in subsequent retirement.

## 1.1 Background

The health of the working population is vital to the economy and to society, but due to changing demographics of the workforce, western societies are facing great challenges to maintain economic growth and competitiveness. The workforce is ageing in the UK. It has been estimated that approximately one third of the labour force will be aged 50 or over by 2020 (Taylor 2007). Ignoring the skills, knowledge and contribution that older workers are capable of making to organisational performance has been described as a high-risk strategy (Foresight Mental Capital and Wellbeing Project 2008). The number of working age adults across Europe has begun to decline and some sectors of the European economy are beginning to report significant skills shortages. Furthermore both employers and governments face

increasing difficulties meeting the financial costs of their pension commitments. In response, many European governments have increased state pension ages or reduced the generosity of state pensions to address this issue (Sinclair et al. 2013). Partly as a result, the workforce is older and more likely to face health problems with more people living with a long standing health problem or disability. According to The Labour Force Survey (2011), of 7.2 million aged 50-64 who are employed, 42% are living with a health condition or disability in the UK (Sinclair et al. 2013). It is likely that chronic disease rates will continue to rise; much of this is due to an increase in poor life style factors, such as poor diet, smoking and lack of exercise. Older people in disadvantaged groups more commonly face health problems at an earlier age, and are more likely to face difficulties in finding and keeping jobs, partly due to lower educational attainment and lower skill levels (Bloomer , 2014).

Ill-health represents a major economic burden for society due to increased healthcare costs, loss in productivity and sickness absence. Both males and females over the age of 55 take more days off work due to self-reported ill health caused or made worse by work. The most common sources of new cases of work-related illness reported were musculoskeletal complaints and stress, depression or anxiety, with those over 45 having the highest estimated prevalence rate (Crawford et al. 2009). Mental ill-health is associated with both physical and mental decline which is more common among older groups (Foresight Mental Capital and Wellbeing Project 2008). Besides poor health, the reasons for ceasing economic activity at age 50+ include limited skills and increased caring responsibilities (Marmot 2010). An evidence based review on the health, safety and health promotion needs of older workers (Crawford et al. 2009) identified that although there is an increased risk with age of developing a disease, this is not necessarily a reason to exclude an individual from work. Certain diseases, such as heart disease or diabetes, can be controlled and reasonable adjustments can be made to keep the individual at work.

The health of employees is a major factor in an organisation's competitiveness. Although absence rates have been falling in recent years, it has been estimated that annual costs of sickness absence for UK businesses is nearly £14 billion a year (Vaughan-Jones & Barham 2009). Employees in good health can be up to three times as productive as those in poor health; they can experience fewer motivational problems; they are more resilient to change; and they are more likely to be engaged with the business's priorities (Vaughan-Jones & Barham 2010). In Dame Carol Black's review of the health of Britain's working age population it was calculated that improved workplace health could generate cost savings to the government of over £60 billion – the equivalent of nearly two thirds of the NHS budget for England (Black 2008).

It has been recognised that improved workplace health has the potential to make a significant contribution to the economy, to public finances and to reducing levels of disease and illness in society (Waddell and Burton 2006). Employers play a key role in helping to protect health and prevent future ill health of the working population and NICE Public Health Guidelines (2009) recommend a strategic and coordinated approach to promoting employees' mental health wellbeing. One of the biggest challenges facing the working longer agenda is poor health of older workers. However, until recently, relatively few initiatives by governments or employers have been established to explicitly improve the health of older workers (Sinclair et al. 2013). In fact, according to research from the Chartered Institute of Personnel and Development (CIPD) and the Chartered Management Institute (CMI) into age management, UK employers are still 'woefully unprepared for the impact workforce demographics will have on their businesses' (Macleod et al. 2010).

Despite these barriers, the number of employed people aged 65 or over has more than doubled over the past two decades, from 425,000 in March to May 1994 to 1.1 million March to May 2014 (ONS 2014).

Survey research of 1,500 older workers by the Equality and Human Rights Commission (Smeaton et al. 2009) found that 60% of older workers wanted to carry on working after retirement age either in the same or different jobs. This is often because they cannot afford to retire. Whilst economic considerations are a key factor, personal fulfilment is also important to older workers, with re-entering the workforce for enjoyment or company at work (Parry & Harris 2011). The decision of whether or not to continue working is complex and influenced not only by a combination of individual factors but also by organisational culture and policies.

Although there has been increasing research interest in the well-being of older workers (eg Crawford et al. 2009) and 'pre-retirement' training (Foresight Mental Capital and Wellbeing Project 2008), systematic evaluation of the best approach to the management of age diversity at the workplace is lacking. As more employers recognise the need to promote the health and wellbeing of ageing employees, it is important that they have access to guidelines which help them to provide healthy and good quality working environments in a cost effective way and using evidence-based interventions. Therefore NICE have commissioned systematic evaluation of the evidence on the effective policies and approaches for promoting and protecting the health of older workers to underpin the development of guidance for employers and others.

## 1.2 Aims and objectives of the review

The overall aim of this review is to identify, appraise and summarise research evidence to support the development of guidance for employers and employees on

effective management practices to improve the health of older workers (aged 50 or over). The guidance will be aimed at human resources professionals, trade unions and professional bodies. It will also be aimed at health professionals (particularly those working in occupational health), and commissioners and managers with public health as part of their remit. It will be of interest to people who are self-employed and other members of the public. The guidance will cover organisational policies and initiatives for older employees, changes to the way work is organised and the work environment, activities to challenge or counteract ageism, retirement planning and training for mentors and older workers and any initiatives by organisations representing employers or the wider business community to promote the above.

The specific aim of this first review is to examine the following research question (RQ2):

What are the most effective and cost-effective ways of helping older workers plan and prepare for retirement? What supports, or prevents, implementation of these methods?

In addition the following secondary question will also be considered

What supports, or prevents, the implementation of these methods?

## 1.3 Structure of the report

This report covers:

- The methodology we adopted to conduct this review
- The findings from the review
- A discussion of the evidence.

In addition a series of Appendices provide further information on our approach and a bibliography of the studies included and excluded from this review.

## 2 Methodology

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### 2.1 The review team

The review was conducted by the Institute for Employment Studies (IES) in partnership with The Work Foundation (TWF), the York Health Economics Consortium, and Loughborough University (LU). The review team was led by Dr Annette Cox, Associate Director at IES, and included Jim Hillage from IES, Dr Tyna Taskila from The Work Foundation, Dr Matthew Taylor from York Health Economics Research Consortium and Professor Cheryl Haslam from Loughborough University (LU).

### 2.2 Overall search strategy

It was agreed with NICE project team at the outset that a joint search strategy would be adopted for all three research questions which would cover:

- Effectiveness studies (for Review Questions 1 and 2)
- Qualitative studies (for Review Question 3)
- Economic studies (for the Economics review)

The search for relevant evidence covered a number of elements:

- A search of key literature databases
- A search of the websites of relevant organisations
- Citation searches of material included in the reviews
- A review of material submitted through the two NICE Calls for Evidence
- Writing to any known researchers and experts in the field not already contacted during the two Calls for Evidence to ask for relevant material.

## 2.3 Inclusion and exclusion criteria

All the papers were reviewed against inclusion and exclusion criteria agreed

with the NICE project team in relation to the research questions for the study which were:

A primary question of:

*What are the most effective and cost-effective ways of helping older workers plan and prepare for retirement?  
What supports, or prevents, implementation of these methods?*

A secondary question of:

*What supports, or prevents, the implementation of these methods?*

### 2.3.1 Inclusion criteria

#### Populations to be included

- All adults aged at least 50 in full or part-time employment, both paid and unpaid, self-employed people working in micro, small, medium and large organisations with an appointed line manager, and volunteers
- All employers in the public, private and 'not for profit' sectors who employ at least one employee

#### Interventions and policies to be included

- Interventions intended to address the research question primarily involving or aimed at employees aged over 50
- Interventions addressing entire workforces where at least 51% of employees are aged over 50
- Interventions targeted at 'older' workers aged below 50 where the intervention has an impact on them at age 50 or above
- Interventions delivered by third party organisations commissioned by organisations to deliver these within the workplace

#### Locations to be included

- Developed/OECD countries, major European countries outside the EU, and European countries which acceded to the EU in or before 2004 – please see list in Appendix 2
- Workplace settings or community level interventions aimed at workers rather than general population

#### Time period

- Studies published since 2005

### Study types

- Experimental quantitative studies including:
  - before and after studies
  - non-randomised controlled studies (NRCS)
  - randomised controlled trials (RCT)
  - systematic reviews or meta-analyses
- Observational quantitative studies:
  - before-and-after studies
  - cohort studies
  - interrupted time studies
- Economic studies
  - cost-benefit analyses
  - cost-effectiveness analyses

### 2.3.2 Exclusion criteria

#### Excluded population groups

- Self-employed individuals working in organisations without appointed line managers
- Sole traders
- Unemployed individuals
- Interventions aimed at the general public rather than people working in specific organisations
- Studies covering interventions aimed at all employees where the majority (at least 51%) are aged under 50, unless a specific differential impact (either positive or negative) is found for workers aged at least 50

#### Interventions and policies that are excluded

- Intervention or support that employees accesses on their own initiative, without prompting from the employer, organisation or line manager or other third party (eg trade union).
- Statutory provision to employees

- The effectiveness of specific interventions to promote physical activity, smoking cessation in the workplace, to manage sickness absence and the return to work of those who have been on long-term sick leave, and mental wellbeing of which the first three topics are already covered by NICE guidance
- Interventions delivered without targeting specific worker populations

### Locations to be excluded

- Developing and non-OECD countries
- Countries which acceded to membership of the EU later than 2004.

### Study types to be excluded

- Non English language studies
- Qualitative studies

## 2.4 Outcomes

The outcomes of interest to this review include the following:

- **Organisation:** employee health and wellbeing and engagement; levels of employee recruitment and retention for the relevant age group; days lost to sickness absence (and reasons for absence); presenteeism; changes to work content, working time volume/patterns, flexible working practices; organisational measures of productivity; uptake of support services; return to work rates, job retention, measures of work ability, length of service, equality and diversity monitoring data (eg composition of workforce with health conditions/disabilities); organisational HR data with relevance to staff wellbeing (eg survey results pertaining to HSE's Management Standards, staff surveys more generally); RIDDOR data indicating health and safety outcomes; incidence of age-related discrimination grievances/disciplinary/employment tribunal claims; all available economic data; business outcomes such as labour turnover, productivity; customer service; profitability; health related behaviours/diseases.
- **Employee:** individual levels of health and wellbeing, motivation, individual performance, stress and job satisfaction; perceptions of fair treatment; awareness, availability and uptake of training and support services; changes in work patterns and tasks (including changes in work/life balance); knowledge and awareness among managers and rest of workforce; impact on knowledge, skills and behaviour, including outcomes post-retirement such as financial status, social inclusion/isolation, civic participation, loneliness/mental health, physical health, self-reported quality of life.

## 2.5 The search for evidence

A single search to cover RQs 1, 2 and, 3 and the economic evaluation was conducted of key databases in health and medicine, social studies and business and management. A separate search for theses and dissertations was undertaken but due to the volume of material, theses and dissertations were

not taken forward for inclusion in the sifting as it was judged that significant findings of publishable quality would be picked up through the search of peer reviewed journal articles and grey literature.

## 2.5.1 Databases searched

### General

- Academic Search Complete (via Ebsco)
- Scopus (Elsevier)
- Web of Science (includes SSCI) (Thomson Reuters)

### Business and social science

- ABI/Inform (via Proquest)
- AgeInfo and NDAR (Centre for Policy on Ageing)
- Assia (via Proquest)
- Business Source Premier (via Ebsco)
- Campbell Collaboration (Native interface)
- International Bibliography of the Social Sciences (via Proquest)
- EconLit (via Ebsco)
- EPPICentre databases – DoPHER and TRoPHI (Native interface)
- SCIE (Native interface)
- Social Policy and Practice (via NHS Evidence)
- Sociological Abstracts (via Proquest)
- XPerTHR (Native interface)

### Health and Medicine

- AMED (Ebsco)
- Cochrane (Wiley)
- EMBASE (OVID)
- HMIC (HDAS)

- Health Business Elite(HDAS)
- Medline (OVID)
- PsycINFO (Ebsco)

## 2.5.2 Additional cost effectiveness search

In addition to the general searches for RQs 1-3, a specific cost effectiveness search for the economic evaluation is being conducted using the following sources:

- Cost-effectiveness Analysis (CEA) Registry (<https://research.tufts-nemc.org/cear4>);
- EconLit
- Embase (via OvidSP)
- Health Economic Evaluations Database (HEED)
- MEDLINE (via OvidSP)
- NHS Economic Evaluation Database (NHS EED)
- RePEc (Research Papers in Economics) (<http://repec.org/>)

## 2.5.3 Grey literature search

In addition to searching traditional academic databases the search process also covered 'grey literature', ie material that was not published in academic media or was in the process of publication. The following approach was adopted to the search through grey literature:

- A thorough search using the deep web search engine MEDNAR was conducted
- A thorough search of Google Scholar was conducted to identify grey literature, unpublished although peer reviewed conference papers, policy reports and theses E-mail alerts were set up to automatically notify the team of any new publications or grey items within the search parameters
- BASE (<http://www.base-search.net/>) was searched, specifically for material in institutional repositories
- Resources and directories available through GreyNet International ([www.greynet.org](http://www.greynet.org)) were examined to locate any other compendia and direct links to grey literature not covered by other sources

### Websites

A range of relevant policy and other agencies were searched, including the following UK sites:

- Acas: <http://www.acas.org.uk/>

- Age UK: <http://www.ageuk.org.uk/>
- Association of Chartered Physiotherapists in Occupational medicine  
<http://www.csp.org.uk/tagged/association-chartered-physiotherapists-occupational-health-ergonomics-acpohe>
- British Chambers of Commerce (BCC): <http://www.britishchambers.org.uk/>
- British Psychological Society: <http://www.bps.org.uk/>
- Centre for Employment Studies Research: <http://www1.uwe.ac.uk/bl/bbs/research/cesr.aspx>
- Centre for Mental Health: <http://www.centreformentalhealth.org.uk/>
- Chartered Institute of Environmental Health: <http://www.cieh.org/>
- Chartered Management Institute: <http://www.managers.org.uk/>
- CIPD: <http://www.cipd.co.uk/>
- College of occupational therapy –work section <http://www.cot.co.uk/cotss-work/cot-ss-work>
- Department for Work and Pensions: <https://www.gov.uk/government/organisations/department-for-work-pensions>
- Department of Health: <https://www.gov.uk/government/organisations/department-of-health>
- DWP Fuller Working Lives: A Framework for Action  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/319872/fuller-working-lives.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319872/fuller-working-lives.pdf).
- EEF: <http://www.eef.org.uk/>
- Employers' Forum on Age (part of the Employer Network for Equality and Inclusion):  
<http://www.efa.org.uk/>
- HSE: <http://www.hse.gov.uk/>
- Investors in People: <http://www.investorsinpeople.co.uk/about-us/our-organisation-achieving-success-through-people>
- IOSH: <http://www.iosh.co.uk/>
- London Health Commission: <http://www.londonhealthcommission.org.uk/>
- National Audit Office: <http://www.nao.org.uk/>

- NHS Working Longer Review  
<http://www.nhsemployers.org/PayAndContracts/NHSPensionSchemeReview/ImpactofWorkingLongerReview/Pages/NHSWorkingLongerReview.aspx>.
- NICE (including former Health Development Agency document search) and NHS Evidence:  
<http://www.nice.org.uk/>
- Oxford Health Alliance: <http://www.oxha.org/>
- Public Health Observatories: <http://www.apho.org.uk/>
- Scottish Government: <http://www.scotland.gov.uk/>
- Sloan Centre for Ageing at Work  
[http://capricorn.bc.edu/agingandwork/database/browse/facts/fact\\_record/5670/all](http://capricorn.bc.edu/agingandwork/database/browse/facts/fact_record/5670/all)
- UK Commission for Employment and Skills: <https://www.gov.uk/government/organisations/uk-commission-for-employment-and-skills>
- Welsh Government: <http://wales.gov.uk/>
- 'Working Late' research programme on the New Dynamics of Ageing [www.workinglate.org/](http://www.workinglate.org/)
- Xpert HR: <http://www.xperthr.co.uk/>

In addition we searched the sites of the following international bodies:

- Cedefop: <http://www.cedefop.europa.eu/>
- Eurofound: <http://www.eurofound.europa.eu/>
- European Commission: [http://ec.europa.eu/index\\_en.htm](http://ec.europa.eu/index_en.htm)
- EU-OSHA: <https://osha.europa.eu/>
- EuroHealthNet: <http://eurohealthnet.eu/>
- Finnish Institute of Occupational Health: <http://www.ttl.fi/en/Pages/default.aspx>
- Institute for Work and Health: <http://www.iwh.on.ca/>
- International Commission of Occupational Health: <http://www.icohweb.org/>
- International Labour Organisation: <http://www.ilo.org/global/lang--en/index.htm>
- Liberty Mutual Research Institute for Safety:  
<http://www.libertymutualgroup.com/omapps/ContentServer?pagename=LMGroup/Views/LMG&ft=2&fid=1138356633468&ln=en>

- Organisation for Economic Co-operation and Development: <http://www.oecd.org/unitedkingdom/>
- The National Institute for Occupational Safety and Health: <http://www.cdc.gov/niosh/>
- World Health Organisation: <http://www.who.int/en/>

## 2.5.4 Calls for Evidence

The NICE project team issued a Call for Evidence on 10 June 2014 which closed on 10 July 2014 and asked for interested parties to send in evidence of relevance to the reviews. NICE issued a second Call for Evidence on 9 March 2015 which closed on 27 March 2015 with a specific focus on evidence gaps identified through the search and review process.

## 2.5.5 Contacting experts

To supplement the Calls for Evidence a range of key academics, researchers and commentators in the field, known to the research team, PHAC members or recommended by the NICE project team were contacted and asked for any appropriate references.

## 2.5.6 Reference searching

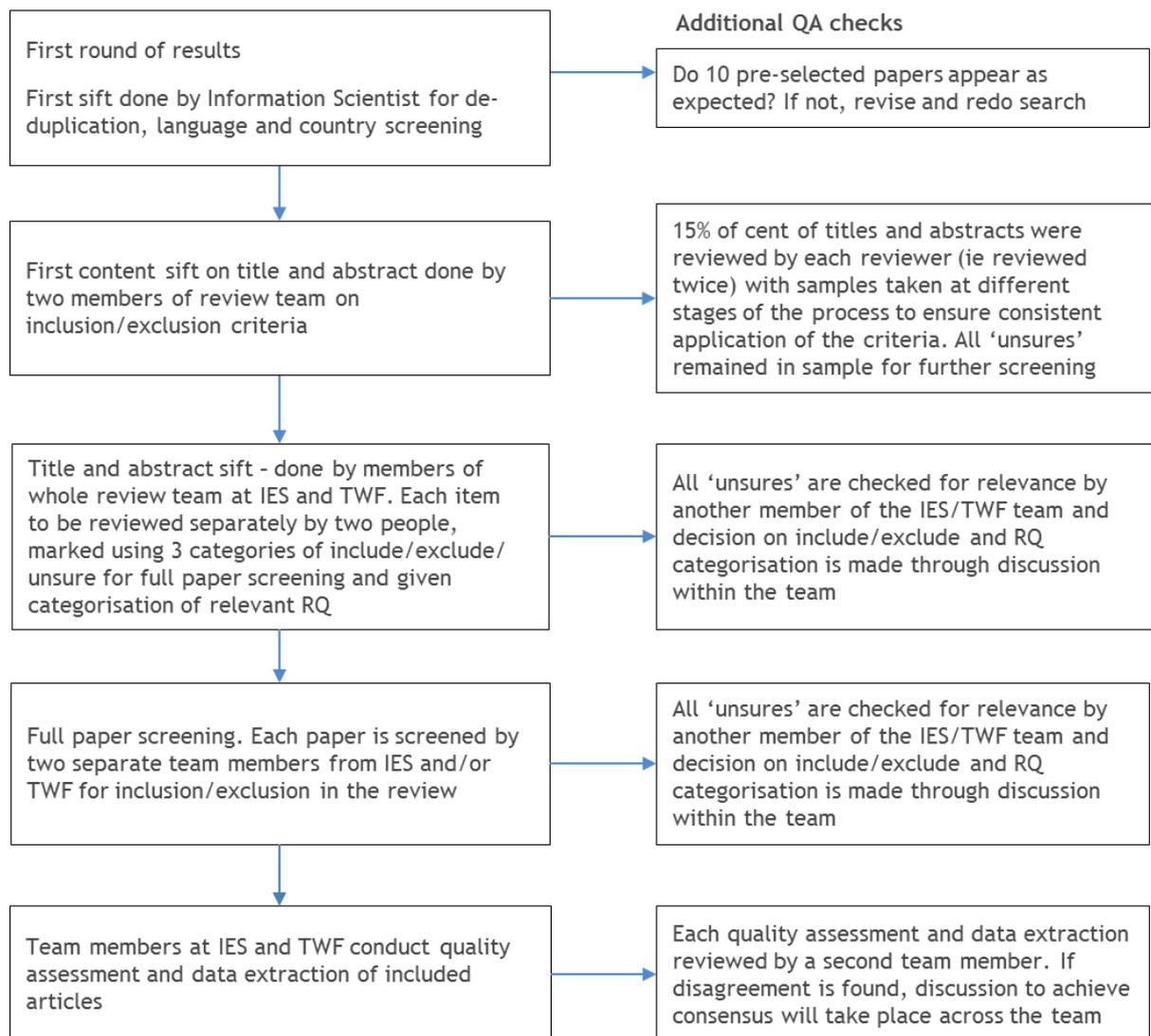
Once papers for initial inclusion were identified, the reference lists of these articles will be checked for any additional references. These articles will also be checked in Web of Science and GoogleScholar to identify citing articles.

## 2.6 Screening and data extraction

The process for sifting and screening material identified through the search and extracting the relevant evidence is summarised in Figure 2.1. The titles and abstracts of the papers identified through the initial search were downloaded into EndNote and screened for relevance using the inclusion and exclusion criteria, using a three-stage process involving:

- An initial sift based on title and abstract
- A second screening stage based on title and abstract and allocation to RQ1, 2 or 3
- A full paper screening.

**Figure 2.1: Outline of sift and screening process**



**Initial sift**

The titles of all material identified through the search were de-duplicated, checked that they conform to the inclusion criteria on language, date and country and quickly reviewed against the inclusion and exclusion criteria by two members of the review team. Fifteen per cent of the titles and abstracts were reviewed by each reviewer (ie reviewed twice) with samples taken at different stages of the process to ensure consistent application of the criteria<sup>1</sup>.

<sup>1</sup> The first 1000 titles and abstracts were reviewed by both researchers and the kappa statistic was 74 per cent. The papers where the two reviewers disagreed were discussed and an understanding reached on what met and did not meet the inclusion and exclusion criteria. Subsequent two further batches of 600 and 570 papers were double sifted and the results compared with kappa statistics of 87

## Second title and abstract screening

The titles and abstracts of all papers which came through the initial sift were separately reviewed against a checklist based on the full inclusion and exclusion criteria by two members of the review team (ie reviewed twice) and identified for full paper screening and the results recorded in the review database.

At this point, the included papers were tagged according to whether the paper was relevant for RQ 1, 2 or 3 and/or the economics review. Where there was disagreement between the reviewers a third member of the team reviewed the paper and reached a consensus with the other two reviewers.

## Full paper screening

Each full paper was separately screened against a checklist based on the full inclusion and exclusion criteria by two members of the review team and identified for inclusion (or exclusion) for one of the reviews. Where there was disagreement a third member of the team also reviewed the paper and a consensus was reached with the other two reviewers.

## 2.7 Outcomes of the search process

A series of databases were searched by an Information Scientist at the Lancaster University library between 21 July and 16 August 2014, see Table 2.1.

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per cent and 89 per cent respectively.

**Table 2.1: Summary of literature databases searched (preliminary prior to addition of final website inclusions and material supplied by experts)**

| Database Name                                     | Platform        | Number of titles and abstracts downloaded to EndNote database |
|---|-----------------|---|
| Academic Search Complete                          | EBSCO           | 5,956   |
| Scopus  | Elsevier        | 1,227   |
| Web of Science (includes SSCI)                    | Thomson Reuters | 2,692   |
| Business and social science                       |                 |   |
| ABI/Inform  | ProQuest        | 624   |
| AgeInfo ( Centre for Policy on Ageing)            | Native          | 56  |
| Assia   | ProQuest        | 3,598   |
| Business Source Premier                           | EBSCO           | 1,568   |
| Campbell Collaboration                            | Native          | 0   |
| EconLit   | EBSCO           | 217   |
| EPPICentre databases                              | Native          | 0   |
| International Bibliography of the Social Sciences | ProQuest        | 206   |
| Social Care Online (from SCIE)                    | Native          | 0   |
| Social Policy and Practice                        | OVID            | 1,386   |
| Sociological Abstracts <i>searched with ASSIA</i> | ProQuest        |   |
| XPertHR   | Native          | 3   |
| Health and Medicine                               |                 |   |
| Cochrane (Wiley)                                  | Native          | 101   |
| EMBASE  | OVID            | 817   |
| HMIC  | HDAS            | 103   |
| Health Business Elite                             | HDAS            | 861   |
| Medline   | OVID            | 5,781   |
| Medline-in-process                                | OVID            | 50  |
| PsycINFO  | EBSCO           | 1,948   |
| Theses and Dissertations                          |                 |   |
| Index to Theses                                   | Native          | 19  |
| Digital Dissertations                             | ProQuest        | 525   |
| Total   |                 | 27,738  |

*Source: IES/Work Foundation/Lancaster University, 2014*

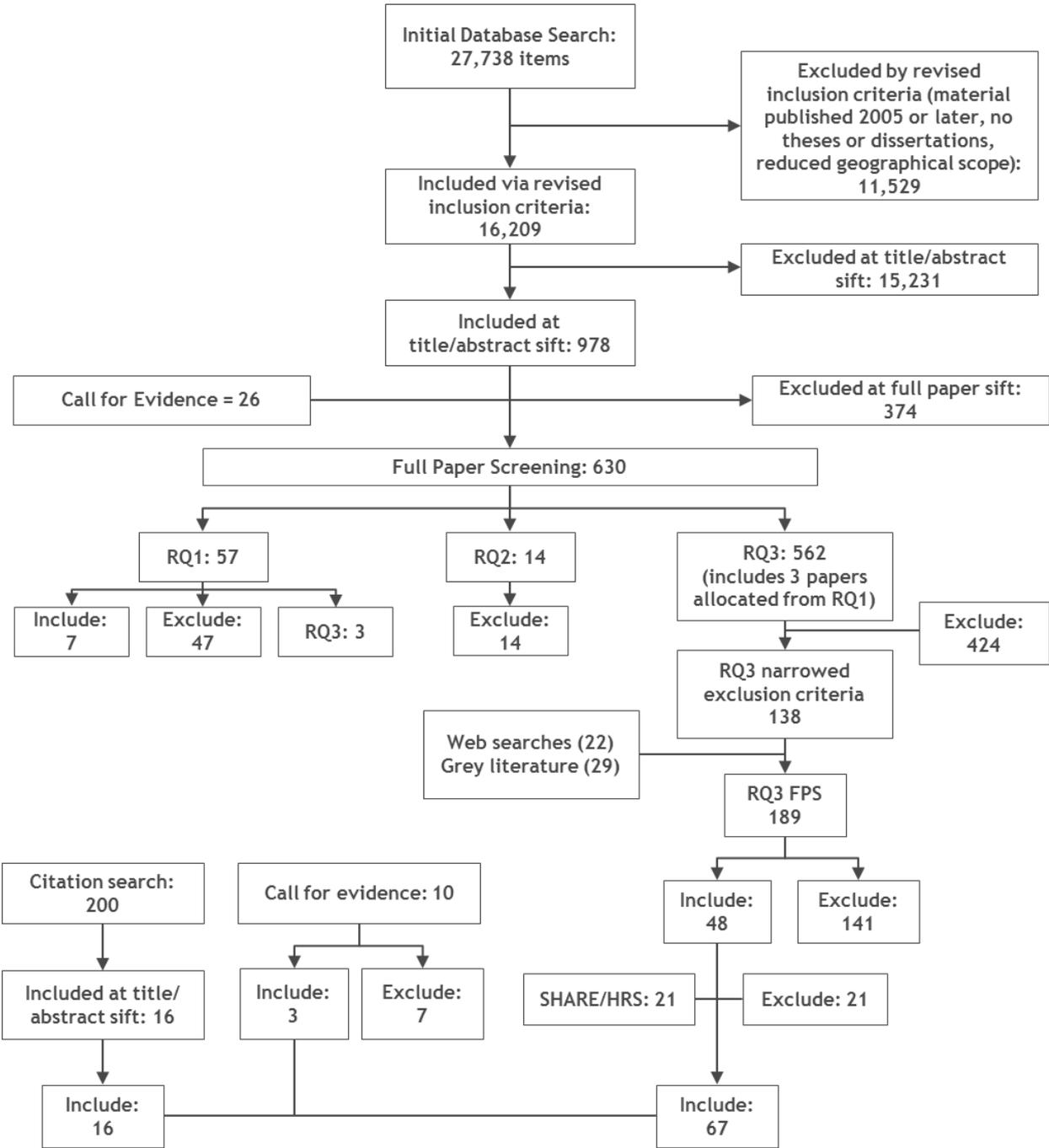
The search strategies were designed to cover: workplace interventions to support the health, well-being and continued employment beyond normal retirement age of older workers, pre-retirement training, advice, guidance and mentoring; (cost-) effectiveness and health and well-being outcomes. Examples of the strategies used are set out in Appendix 4 and the results set out in Table 2.1. The titles and abstracts identified through the searches were recorded in an EndNote database.

Following the searching and screening process a total number of 630 papers were identified for full paper screening. This represents a considerable reduction from the original volume of papers identified through the search strategy. To manage the volume of literature gathered, additional criteria were introduced to focus the scope of the research to papers published since 2005, exclude dissertations and theses since data from them would have made its way into peer reviewed journals and to focus on OECD countries and European countries joining the EU in or before 2007. In practice, large volumes of the papers returned by the searches proved not to be relevant to the review. A large

volume of literature consisted of technical papers on retirement or pensions legislation, another large segment dealt with the domiciliary or residential care of older people, a further segment dealt with national policy on retirement ages or pensions policies and a further segment consisted of news items reporting the imminent or actual retirement of prominent business figures.

All of the papers put forward for full paper screening have been obtained and screened and the results are summarised in Figure 2.2. No papers were included in this second review.

**Figure 2.2: Outcome of search process for Review Questions 1, 2 and 3**



Source: IES, TWF, Lancaster University

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## 2.8 Data extraction

No papers were identified for data extraction and quality appraisal.

## 2.9 Excluded studies

Appendix 5 provides the reference details of 14 excluded studies at the full paper screening stage for Review Question 2. Studies were excluded because they failed to meet at least one of the inclusion criteria. As soon as they failed to meet one of the criteria they were excluded. In the appendix the references are ordered by the criterion by which they were excluded. They may have failed against other criteria too.

Three were excluded because the focus of the paper did not meet the remit of the research question on workplace interventions to support retirement planning, two were excluded because the focus was not on retirement planning interventions, one was excluded because it was a qualitative study with no control group or longitudinal element and eight were rejected on grounds of relevance, i.e they did not study the influence of interventions to assist older workers' retirement planning and decisions.

## 3 Findings

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No papers were found which met the inclusion criteria for this review and therefore there are no findings to report. The following chapter discusses the reasons for this result and the implications.

## 4 Discussion

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This review found no studies meeting the rigorous methodological criteria applied about the most effective and cost-effective ways of helping older workers plan and prepare for retirement. This reflects an acute absence of evidence about the effectiveness or otherwise of interventions in the domains of pre-retirement planning. Therefore it is difficult to draw any general conclusions of interventions that should be recommended to employers.

The lack of papers included in this review reflects a challenge that despite increasing policy interest in how optimal retirement decisions can be supported, especially in the context of planned increases to the age for state pension eligibility, very few intervention studies were located. The wider specialist management trade press provides evidence of management-sponsored interventions around financial wellbeing across all age groups, usually delivered by third parties, and a limited number of examples of retirement planning interventions for older workers. This may be because retirement is regarded as a personal issue involving decisions about personal finances, and employers may be reluctant to intrude in their staff's private lives. Nevertheless, the abolition of the default retirement age in the UK might be expected to provoke a need for more open discussion of retirement plans between managers and staff and therefore managers may welcome greater guidance and support in having these conversations with workers. In addition, management-level interventions are rarely evaluated sufficiently rigorously to pass the inclusion criteria that we have applied to this evidence review. We expect more comprehensive and illuminating evidence to be generated by the next review which is likely to include a wider range of papers as Research Question 3 will include qualitative studies which are ineligible for this review. This review urges research commissioners to prioritise funding of high quality studies into the impact of workplace level interventions on retirement decision-making which will seek to track the health and well-being of individuals during the lifespan of the intervention and onwards to the end of their working lives.

## Appendix 1: List of countries eligible for inclusion in the study

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AUSTRALIA (OECD)

AUSTRIA (OECD, Europe)

BELGIUM (OECD, Europe)

CANADA (OECD)

CYPRUS (OECD)

CZECH REPUBLIC (OECD, Europe)

DENMARK (OECD, Europe)

ESTONIA (EUROPE)

FINLAND (OECD, Europe)

FRANCE (OECD, Europe)

GERMANY (OECD, Europe)

GREECE (OECD, Europe)

HUNGARY (OECD, Europe)

IRELAND (OECD, Europe)

ISRAEL (OECD)

ITALY (OECD, Europe)

JAPAN (OECD)

KOREA (OECD)

LATVIA (EUROPE)

LITHUANIA (EUROPE)

LUXEMBOURG (OECD, Europe)

MALTA (EUROPE)  
NETHERLANDS (OECD, Europe)  
NEW ZEALAND (OECD)  
NORWAY (OECD, Europe)  
POLAND (OECD, Europe)  
PORTUGAL (OECD, Europe)  
SLOVAKIA (Europe)  
SLOVENIA (Europe)  
SPAIN (OECD, Europe)  
SWEDEN (OECD, Europe)  
SWITZERLAND (OECD, Europe)  
UNITED KINGDOM (OECD, Europe)  
UNITED STATES (OECD)

## Appendix 2: Quality Assessment Form and Checklist

Checklist items are worded so that 1 of 5 responses is possible:

|                     |  |
|---------------------|--|
| ++                  | Indicates that for that particular aspect of study design, the study has been designed or conducted in such a way as to minimise the risk of bias.   |
| +                   | Indicates that either the answer to the checklist question is not clear from the way the study is reported, or that the study may not have addressed all potential sources of bias for that particular aspect of study design. |
| -                   | Should be reserved for those aspects of the study design in which significant sources of bias may persist.   |
| Not reported (NR)   | Should be reserved for those aspects in which the study under review fails to report how they have (or might have) been considered.  |
| Not applicable (NA) | Should be reserved for those study design aspects that are not applicable given the study design under review (for example, allocation concealment would not be applicable for case control studies).                          |

In addition, the reviewer is requested to complete in detail the comments section of the quality appraisal form so that the grade awarded for each study aspect is as transparent as possible. Each study is then awarded an overall study quality grading for internal validity (IV) and a separate one for external validity (EV):

|    |   |
|----|---|
| ++ | 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, where they have not been fulfilled, or not adequately described, the conclusions are unlikely to alter. |
| -  | Few or no checklist criteria have been fulfilled and the conclusions are likely or very likely to alter.  |

|  |                |           |
|--|----------------|-----------|
| <b>Study identification:</b> (Include full citation details)   |                |           |
| <b>Study design:</b><br>Refer to the glossary of study designs ( <a href="#">Appendix 5</a> ) and the algorithm for classifying experimental and observational study designs ( <a href="#">Appendix 6</a> ) to best describe the paper's underpinning study design   |                |           |
| <b>Guidance topic:</b>   |                |           |
| <b>Assessed by:</b>  |                |           |
| <b>Section 1: Population</b>   |                |           |
| <b>1.1 Is the source population or source area well described?</b><br>Was the country (eg developed or non-developed, type of healthcare system), setting (primary schools, community centres etc.), location (urban, rural), population demographics etc. adequately described?   | Quality Rating | Comments: |
| <b>1.2 Is the eligible population or area representative of the source population or area?</b><br>Was the recruitment of individuals, clusters or areas well defined (eg advertisement, birth register)?<br>Was the eligible population representative of the source? Were important groups under-represented?   |                | Comments: |
| <b>1.3 Do the selected participants or areas represent the eligible population or area?</b><br>Was the method of selection of participants from the eligible population well described?<br>What % of selected individuals or clusters agreed to participate? Were there any sources of bias?<br>Were the inclusion or exclusion criteria explicit and appropriate? |                | Comments: |

| <b>Section 2: Method of allocation to intervention (or comparison)</b>   |  |           |
|--|--|-----------|
| <p><b>2.1 Allocation to intervention (or comparison). How was selection bias minimised?</b></p> <p>Was allocation to exposure and comparison randomised? Was it truly random ++ or pseudo-randomised + (eg consecutive admissions)?</p> <p>If not randomised, was significant confounding likely (-) or not (+)?</p> <p>If a cross-over, was order of intervention randomised?</p> |  | Comments: |
| <p><b>2.2 Were interventions (and comparisons) well described and appropriate?</b></p> <p>Were interventions and comparisons described in sufficient detail (ie enough for study to be replicated)?</p> <p>Was comparisons appropriate (eg usual practice rather than no intervention)?</p>  |  | Comments: |
| <p><b>2.3 Was the allocation concealed?</b></p> <p>Could the person(s) determining allocation of participants or clusters to intervention or comparison groups have influenced the allocation?</p> <p>Adequate allocation concealment (++) would include centralised allocation or computerised allocation systems.</p>  |  | Comments: |
| <p><b>2.4 Were participants or investigators blind to exposure and comparison?</b></p> <p>Were participants <b>and</b> investigators – those delivering or assessing the intervention kept blind to intervention allocation? (Triple or double blinding score ++)</p> <p>If lack of blinding is likely to cause important bias, score –.</p>                                       |  | Comments: |
| <p><b>2.5 Was the exposure to the intervention and comparison adequate?</b></p> <p>Is reduced exposure to intervention or control related to the intervention (eg adverse effects leading to reduced compliance) or fidelity of implementation (eg reduced adherence to protocol)?</p> <p>Was lack of exposure sufficient to cause important bias?</p>                             |  | Comments: |

|  |  |                   |
|--|--|-------------------|
| <p><b>2.6 Was contamination acceptably low?</b></p> <p>Did any in the comparison group receive the intervention or vice versa?</p> <p>If so, was it sufficient to cause important bias?</p> <p>If a cross-over trial, was there a sufficient wash-out period between interventions?</p>  |  | <p>Comments:.</p> |
| <p><b>2.7 Were other interventions similar in both groups?</b></p> <p>Did either group receive additional interventions or have services provided in a different manner?</p> <p>Were the groups treated equally by researchers or other professionals?</p> <p>Was this sufficient to cause important bias?</p>                                 |  | <p>Comments:</p>  |
| <p><b>2.8 Were all participants accounted for at study conclusion?</b></p> <p>Were those lost-to-follow-up (ie dropped or lost pre-,during or post-intervention) acceptably low (ie typically &lt;20%)?</p> <p>Did the proportion dropped differ by group? For example, were drop-outs related to the adverse effects of the intervention?</p> |  | <p>Comments:</p>  |
| <p><b>2.9 Did the setting reflect usual UK practice?</b></p> <p>Did the setting in which the intervention or comparison was delivered differ significantly from usual practice in the UK? For example, did participants receive intervention (or comparison) condition in a hospital rather than a community-based setting?</p>                |  | <p>Comments:</p>  |
| <p><b>2.10 Did the intervention or control comparison reflect usual UK practice?</b></p> <p>Did the intervention or comparison differ significantly from usual practice in the UK? For example, did participants receive intervention (or comparison) delivered by specialists rather than GPs? Were participants monitored more closely?</p>  |  | <p>Comments:</p>  |

| <b>Section 3: Outcomes</b>  |  |           |
|---|--|-----------|
| <p><b>3.1 Were outcome measures reliable?</b></p> <p>Were outcome measures subjective or objective (eg biochemically validated nicotine levels ++ vs self-reported smoking -)?</p> <p>How reliable were outcome measures (eg inter- or intra-rater reliability scores)?</p> <p>Was there any indication that measures had been validated (eg validated against a gold standard measure or assessed for content validity)?</p> |  | Comments: |
| <p><b>3.2 Were all outcome measurements complete?</b></p> <p>Were all or most study participants who met the defined study outcome definitions likely to have been identified?</p>  |  | Comments: |
| <p><b>3.3 Were all important outcomes assessed?</b></p> <p>Were all important benefits and harms assessed?</p> <p>Was it possible to determine the overall balance of benefits and harms of the intervention versus comparison?</p>   |  | Comments: |
| <p><b>3.4 Were outcomes relevant?</b></p> <p>Where surrogate outcome measures were used, did they measure what they set out to measure? (eg a study to assess impact on physical activity assesses gym membership – a potentially objective outcome measure – but is it a reliable predictor of physical activity?)</p>   |  | Comments: |
| <p><b>3.5 Were there similar follow-up times in exposure and comparison groups?</b></p> <p>If groups are followed for different lengths of time, then more events are likely to occur in the group followed-up for longer distorting the comparison.</p> <p>Analyses can be adjusted to allow for differences in length of follow-up (eg using person-years).</p>   |  | Comments: |

|   |  |                  |
|---|--|------------------|
| <p><b>3.6 Was follow-up time meaningful?</b></p> <p>Was follow-up long enough to assess long-term benefits or harms?</p> <p>Was it too long, eg participants lost to follow-up?</p>   |  | <p>Comments:</p> |
| <p><b>Section 4: Analyses</b></p>   |  |                  |
| <p><b>4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?</b></p> <p>Were there any differences between groups in important confounders at baseline?</p> <p>If so, were these adjusted for in the analyses (eg multivariate analyses or stratification).</p> <p>Were there likely to be any residual differences of relevance?</p>      |  | <p>Comments:</p> |
| <p><b>4.2 Was intention to treat (ITT) analysis conducted?</b></p> <p>Were all participants (including those that dropped out or did not fully complete the intervention course) analysed in the groups (ie intervention or comparison) to which they were originally allocated?</p>  |  | <p>Comments:</p> |
| <p><b>4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?</b></p> <p>A power of 0.8 (that is, it is likely to see an effect of a given size if one exists, 80% of the time) is the conventionally accepted standard.</p> <p>Is a power calculation presented? If not, what is the expected effect size? Is the sample size adequate?</p> |  | <p>Comments:</p> |
| <p><b>4.4 Were the estimates of effect size given or calculable?</b></p> <p>Were effect estimates (eg relative risks, absolute risks) given or possible to calculate?</p>   |  | <p>Comments:</p> |

|   |  |           |
|---|--|-----------|
| <p><b>4.5 Were the analytical methods appropriate?</b></p> <p>Were important differences in follow-up time and likely confounders adjusted for?</p> <p>If a cluster design, were analyses of sample size (and power), and effect size performed on clusters (and not individuals)?</p> <p>Were subgroup analyses pre-specified?</p>                           |  | Comments: |
| <p><b>4.6 Was the precision of intervention effects given or calculable? Were they meaningful?</b></p> <p>Were confidence intervals or p values for effect estimates given or possible to calculate?</p> <p>Were CI's wide or were they sufficiently precise to aid decision-making? If precision is lacking, is this because the study is under-powered?</p> |  | Comments: |
| <p><b>Section 5: Summary</b></p>  |  |           |
| <p><b>5.1 Are the study results internally valid (ie unbiased)?</b></p> <p>How well did the study minimise sources of bias (ie adjusting for potential confounders)?</p> <p>Were there significant flaws in the study design?</p>   |  | Comments: |
| <p><b>5.2 Are the findings generalisable to the source population (ie externally valid)?</b></p> <p>Are there sufficient details given about the study to determine if the findings are generalisable to the source population? Consider: participants, interventions and comparisons, outcomes, resource and policy implications.</p>                        |  | Comments: |

The following sections outline the checklist questions, the prompts provided as pop-up boxes in the electronic version (highlighted in boxes) and additional guidance notes to aid the reviewer in assessing the study's internal and external validity.

## Section 1

This section seeks to assess the key population criteria for determining the study's **external validity**.

Although there are checklists for assessing external validity of RCTs (with a particular focus on clinical interventions) (see for example [Rothwell 2005]), there don't appear to be any checklists specific for public health interventions.

The questions asked in this section ask the reviewer to identify and describe the **source** population of the study (that is, those the study aims to represent), the **eligible** population (those that meet the study eligibility criteria), and the **study participants** (those that agreed to participate in the study). Where a study assesses an intervention delivered to a particular geographical setting or area (rather than delivered to individuals), the questions in this section relate to describing the source area or setting, and how the study areas or settings were chosen. For example, a study might assess the effect on health outcomes of neighbourhood renewal schemes and this section seeks to identify and describe how those neighbourhoods were chosen and whether they are representative of the neighbourhoods the study seeks to represent.

External validity is defined as the extent to which the findings of a study are generalisable beyond the confines of the study itself to the source population. So, for example, findings from a study conducted in a school setting in the USA might be generalisable to other schools in the USA (the source population of the study). An assessment of external validity will consider how representative of the source population the study population is and whether or not there are any specific population, demographic or geographic features of the selected population that might limit or support generalisability. Also important are considerations of the setting, intervention and outcomes assessed. These factors will be considered in sections 2 and 3 of the checklist.

### 1.1 Is the source population or source area well described?

Was the source population or area described in sufficient detail? For example, country (developed or non-developed, type of healthcare system), setting (for example, primary school, community centre), location (urban, rural) and population demographics.

This question seeks to determine the study's source population or area (that is, to whom or what the study aims to represent). The source population is usually best identified by referring to the study's original research question.

It is important to consider those population demographic characteristics such as age, sex, sexual orientation, disability, ethnicity, religion, place of residence, occupation, education, socioeconomic

position and social capital<sup>2</sup> that can help to assess the impact of interventions on health inequalities and may help guide recommendations for specific population subgroups.

## 1.2 Is the eligible population or area representative of the source population or area?

Was the recruitment of individuals, clusters or areas well defined (for example, advertisement, birth register, class list, area)?

Was the eligible population or area representative of the source or were important groups under-represented?

To determine if the eligible population or area (for example, smokers responding to a media advertisement, areas of high density housing in a particular catchment area) are representative of the source population (for example, smokers or areas of high density housing), consider the means by which the eligible population was defined or identified and the implicit or explicit inclusion and exclusion criteria used. Were important groups likely to have been missed or under-represented? For example, were recruitment strategies geared toward more affluent or motivated groups? (For example, recruitment from more affluent areas or local fitness centres.) Were significant numbers of potentially eligible participants likely to have been inadvertently excluded? (For example, through referral to practitioners not involved in the research study.)

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<sup>2</sup> Demographic criteria as outlined by the PROGRESS-Plus categorisation (Kavanagh et al. 2008).

### 1.3 Do the selected participants or areas represent the eligible population or area?

Was the method of selection of participants from the eligible population well described?

What percentage of selected individuals or clusters agreed to participate? Were there any sources of bias?

Were the inclusion or exclusion criteria explicit and appropriate?

Consider whether the method of selection of participants or areas from the eligible population or area was well described (for example, consecutive cases or random sampling). Were any significant sources of biases likely to have been introduced? Consider what proportion of selected individuals or clusters agreed to participate. Was there a bias toward more healthier or motivated individuals or wealthier areas?

Also consider whether the inclusion and exclusion criteria were well described and whether they were appropriate given the study objectives and the source population. Strict eligibility criteria can limit the external validity of intervention studies if the selected participants are not representative of the eligible population. This has been well-documented for RCTs where recruited participants have been found to differ from those who are eligible but not recruited, in terms of age, sex, race, severity of disease, educational status, social class and place of residence (Rothwell 2005).

Finally, consider whether sufficient detail of the demographic (for example, age, education, socioeconomic status, employment) or personal health-related (for example, smoking, physical activity levels) characteristics of the selected participants were presented. Are selected participants representative of the eligible population?

## Section 2: method of allocation to intervention (or comparison)

This section aims to assess the likelihood of selection bias and confounding being introduced into a study.

Selection bias exists when there are systematic differences between the participants in the different intervention groups. As a result, the differences in the outcome observed may be explained by pre-existing differences between the groups, rather than because of the intervention itself. For example, if the people in 1 group are generally in poorer health compared with the second group, then they are more likely to have a worse outcome, regardless of the effect of the intervention. The intervention groups should be similar at the start of the study so that the only difference between the groups should be the intervention received.

### 2.1 Allocation to intervention or comparison. How was confounding minimised?

Was allocation to exposure and comparison randomised? Was it truly random ++ or pseudo-randomised + (for example, consecutive admissions)?

If not randomised, was significant confounding likely (-) or not (+)?

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**If a crossover, was order of intervention randomised?**

Consider the method by which individuals were allocated to either intervention or control conditions. Random allocation of individuals (as in RCTs) to receive 1 or other of the interventions under investigation, is considered the most reliable means of minimising the risk of selection bias and confounding.

If an appropriate method of randomisation has been used, each participant should have an equal chance of ending up in each of the intervention groups. Examples of random allocation sequences include random numbers generated by computer, tables of random numbers and drawing of lots or envelopes. However, if the description of randomisation is poor, or the process used is not truly random (for example, if the allocation sequence is predictable, such as date of birth or alternating between 1 group and another) or can otherwise be seen as flawed, this component should be given a lower quality rating.

## 2.2 Were the interventions (and comparisons) well-described and appropriate?

Were interventions and comparisons described in sufficient detail (that is, enough for study to be replicated)?

Were comparisons appropriate (for example, usual practice rather than no treatment)?

## 2.3 Was the allocation concealed?

Could the person(s) determining the allocation of participants or clusters to intervention or comparison groups have influenced the allocation?

Adequate allocation concealment (++) would include centralised allocation or computerised allocation systems.

If investigators are aware of the allocation group for the next individual to be enrolled in the study, there is potential for people to be enrolled in an order that results in imbalances in important characteristics. For example, a practitioner might feel that people with mild rather than severe mental health problems would be more likely to do better on a new, behavioural intervention and be tempted to only enrol such individuals when they know they will be allocated to that group. This would result in the intervention group being, on average, less severe at baseline than control group. Concealment of treatment group may not always be feasible but concealment of allocation up until the point of enrolment in the study should always be possible.

Information should be presented in the paper that provides some assurance that allocations were not known until at least the point of allocation. Centralised allocation, computerised allocation systems and the use of coded identical containers would all be regarded as adequate methods of concealment. Sealed envelopes can be considered as adequate concealment if the envelopes are serially numbered, sealed and opaque, and allocation is performed by a third party. Poor methods of allocation concealment include alternation, or the use of case record numbers, date of birth or day of the week.

If the method of allocation concealment used is regarded as poor, or relatively easy to subvert, the study should be given a lower quality rating. If a study does not report any concealment approach, this should be scored as 'not reported'.

## 2.4 Were participants and investigators blind to exposure and comparison?

Were participants AND investigators - those delivering or assessing the intervention kept blind to intervention allocation? (Triple or double-blinding score ++).

If lack of blinding is likely to cause important bias, score -.

Blinding refers to the process of withholding information about treatment allocation or exposure status from those involved in the study who could potentially be influenced by this information. This can include participants, investigators, those administering care and those involved in data collection and analysis.

Unblinded individuals can bias the results of studies, either intentionally or unintentionally, through the use of other effective co-interventions, decisions about withdrawal, differential reporting of symptoms, or influencing concordance with treatment.

The terms 'single blind', 'double blind' and even 'triple blind' are sometimes used in studies. Unfortunately, they are not always used consistently. Commonly, when a study is described as 'single blind', only the participants are blind to their group allocation. When both participants and investigators are blind to group allocation the study is often described as 'double blind'. It is preferable to record exactly who was blinded, if reported, to avoid misunderstanding.

It is important to note that blinding of participants and researchers is not always possible, and it is important to think about the likely size and direction of bias caused by failure to blind in making an assessment of this component.

## 2.5 Is the exposure to the intervention and comparison adequate?

Is reduced exposure to the intervention or control related to the intervention (for example, adverse effects leading to reduced compliance) or fidelity of implementation (for example, reduced adherence to protocol)?

Was lack of exposure sufficient to cause important bias?

## 2.6 Is contamination acceptably low?

Did any in the comparison group receive the intervention or vice versa?

If so, was it sufficient to cause important bias?

If a crossover trial, was there a sufficient wash-out period between interventions?

## 2.7 Were other interventions similar in both groups?

Did either group receive additional interventions or have services provided in a different manner?

Were the groups treated equally by researchers or other professionals?

Was this sufficient to cause important bias?

This question seeks to establish if there were any important differences between the intervention groups aside from the intervention received. If some patients received additional intervention (known as 'co-intervention'), this additional intervention is a potential confounding factor in the presence of which can make it difficult to attribute any observed effect to the intervention rather than to the other factors.

## 2.8 Were there other confounding factors?

Were there likely to be other confounding factors not considered or appropriately adjusted for?

Was this sufficient to cause important bias?

## 2.9 Were all participants accounted for at study conclusion?

Were those lost to follow-up (that is, dropped or lost pre-, during or post- intervention) acceptably low (that is, typically less than 20%)?

Did the proportion dropped differ by group? For example, were drop-outs related to the adverse effects of intervention?

Section 2 also aims to assess the likelihood of attrition bias being introduced into a study.

Attrition bias occurs when there are systematic differences between the comparison groups with respect to participants lost, or differences between participants lost to the study and those who remain. Attrition can occur at any point after participants have been allocated to their intervention groups. As such, it includes participants who are excluded post-allocation (and may indicate a violation of eligibility criteria), those who fail to complete the intervention and those who fail to complete outcome measurement (regardless of whether or not the intervention was completed).

It is a concern if the number of participants who were lost to follow-up (that is, dropped out) is high – typically >20%, although it is not unreasonable to expect a higher drop-out rate in studies conducted over a longer period of time.

Consideration should also be given to the reasons why participants dropped out. Participants who dropped out of a study may differ in some significant way from those who remained in the study. Drop-out rates and reasons for dropping out should be similar across all treatment groups. In good quality studies, the proportion of participants lost after allocation is reported and the possibility of attrition bias considered in the analysis.

## 2.10 Did the setting reflect usual UK practice?

Did the setting in which the intervention or comparison was delivered differ significantly from usual practice in the UK? For example, did participants receive intervention (or comparison) condition in a hospital rather than a community-based setting?

### 2.11 Did the intervention or control comparison reflect usual UK practice?

Did the intervention or comparison differ significantly from usual practice in the UK? For example, did participants receive intervention (or comparison) delivered by specialists rather than GPs? Were participants monitored more closely?

## Section 3: outcomes

Some of the items on this checklist may need to be filled in separately for each of the different outcomes reported by the study. For example, a study may report only 1 outcome of interest, measured by 1 tool, at 1 point in time, in which case each of the components (for example, reliability of outcome measure, relevance, withdrawals and drop-outs) can be assessed based on that 1 tool. However, if a study reports multiple outcomes of interest, scored by multiple tools (for example, self-report AND biochemically validated measures), at multiple points in time (for example, 6-month follow-up AND 1-year follow-up) individual components will need to be assessed for each outcome of interest.

It is important, therefore, that the reviewer has a clear idea of what the important outcomes are and over what timeframe, before appraising a study. The important outcomes for a piece of guidance will be identified through consultation with the NICE project team, the public health advisory committee and stakeholders.

### 3.1 Were the outcome measures reliable?

Were outcome measures subjective or objective (eg biochemically validated nicotine levels ++ versus self-reported smoking)?

How reliable were outcome measures (eg inter- or intra-rater reliability scores)?

Was there any indication that measures had been validated (eg validated against a gold standard measure or assessed for content validity)?

This question seeks to determine how reliable (that is, how consistently the method measures a particular outcome) and valid (that is, the method measures what it claims to measure) the outcome measures were. For example, a study assessing effectiveness of a smoking cessation intervention may report on a number of outcomes using a number of different tools, including self-reported smoking rates (a subjective outcome measure that is often unreliable) and biochemically validated smoking rates (an objective outcome measure that is likely to be more reliable).

If the outcome measures were subjective, it is also important to consider if the participant or researcher was blinded to the intervention or exposure (see question 2.4) as blinding may rescue the reliability of some subjective outcome measures.

### 3.2 Were the outcome measurements complete?

Were all or most study participants who met the defined study outcome definitions likely to have been identified?

### 3.3 Were all important outcomes assessed?

Were all important benefits and harms assessed?

Was it possible to determine the overall balance of benefits and harms of the intervention versus comparison?

### 3.4 Were outcomes relevant?

Where surrogate outcome measures were used, did they measure what they set out to measure? For example, a study to assess impact on physical activity assesses gym membership - a potentially objective outcome measure - but a reliable predictor of physical activity?

### 3.5 Were there similar follow-up times in exposure and comparison groups?

If groups are followed for different lengths of time, then more events are likely to occur in the group followed up for longer distorting the comparison.

Analyses can be adjusted to allow for differences in length of follow-up (for example, using person-years).

It is possible to overcome differences in the length of follow-up between groups in the analyses, for example, by adjusting the denominator to take the time into account (by using person-years).

### 3.6 Was follow-up time meaningful?

Was follow-up long enough to assess long-term benefits or harms?

Was it too long, for example, participants lost to follow-up?

The duration of post-intervention follow-up of participants should be of an adequate length to identify the outcome of interest.

## Section 4: analyses

### 4.1 Were the exposure and comparison groups similar at baseline? If not, were these adjusted?

Were there any differences between groups in important confounders at baseline?

If so, were these adjusted for in the analyses (for example, multivariate analyses or stratification)?

Were there likely to be any residual differences of relevance?

Studies may report the distributions or important differences in potential confounding factors between intervention groups. However, formal tests comparing the groups are problematic – failure to detect a difference does not mean a difference does not exist, and multiple comparisons of factors may falsely detect some differences that are not real.

It is important to assess whether all likely confounders have been considered. Confounding factors may differ by outcome, so potential confounding factors for all of the outcomes that are of interest will need to be considered.

### 4.2 Intention to treat analysis?

Were all participants (including those that dropped out or did not fully complete the intervention course) analysed in the groups (that is, intervention or comparison) to which they were originally allocated?

### 4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?

A power of 0.8 (that is, it is likely to see an effect of a given size if one exists, 80% of the time) is the conventionally accepted standard.

Is a power calculation presented? If not, what is the expected effect size? Is the sample size adequate?

For cluster RCTs in particular, it is important to consider whether the cluster design has been appropriately taken into account in calculating required sample size for adequate power.

#### 4.4 Were estimates of effect size given or calculable?

Were effect estimates (for example, relative risks, absolute risks) given or possible to calculate?

#### 4.5 Were the analytical methods appropriate?

Were important differences in follow-up time, and likely confounders, adjusted for?

If a cluster design, were analyses of sample size (and power), and effect size performed on clusters (and not individuals)?

Were subgroup analyses pre-specified?

There are a large number of considerations in deciding whether analytical methods were appropriate. For example, it is important to review the appropriateness of any subgroup analyses (and whether pre-specified or exploratory) that are presented. Although subgroup analyses can often provide valuable information on which to base further research (that is, are often exploratory), it is important that findings of subgroup analyses are not over (or under) emphasised. Meaningful results from subgroup analyses are beset by the problems of multiplicity of testing (in which the risk of a false positive result increases with the number of tests performed) and low statistical power (that is, studies generally only enrol sufficient participants to ensure that testing the primary study hypothesis is adequately powered) (Assmann et al. 2000). In a good quality paper, subgroup analyses are restricted to pre-specified subgroups and are often confined to primary outcome measures. Data are analysed using formal statistical tests of interaction (that assess whether intervention effect differs between subgroups) rather than comparison of subgroup p values. A correction for multiple testing is performed where appropriate (for example, 'Bonferroni correction' where a stricter significance level is used to define statistical significance). The results are delineated carefully, and full details of how analyses were performed are provided (Assmann et al. 2000; Guillemin 2007).

The appropriateness of some analytical methods will also depend on the study design under investigation. For example, with cluster RCTs, because participants are randomised at the group level and are not independent 'units' (as is the case with RCTs based on individuals without clustering), and outcomes are often assessed at the individual level, statistical adjustments are necessary before pooled intervention and control group outcomes can be compared.

Likewise, it is also important to consider whether the degree of similarity or difference in clusters has been considered in analyses of cluster RCTs. Good quality cluster-RCTs will determine the intra-class correlation coefficient of their study (a statistical measure of the interdependence in each cluster that is calculated by taking the ratio of the variance between groups compared with variance in groups).

# Appendix 3: Inclusion and quality checklist

## Inclusion/exclusion checklist

### Population

Does the study population include:

Self-employed persons with no appointed line manager

Sole traders

Unemployed individuals

No adults aged 50 or over

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |
|     |    |

Yes > exclude

Yes > exclude

Yes > exclude

Yes > Exclude

### Publication details

Was the study:

Published before 2005

Published in a language other than English

A dissertation or thesis

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |

Yes > exclude

Yes > exclude

Yes > exclude

### Setting

Is the study exclusively set in:

A workplace or amongst workers

A country on the checklist (see below)

| Yes | No |
|-----|----|
|     |    |
|     |    |

No > exclude

No > exclude

| Country Checklist   |
|---|
| Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States |

## Relevance

Does the study examine:

|  | Yes | No |      |         |
|--|-----|----|------|---------|
| Age or specific needs of/impact on older workers (must have at least 51% as over 50)   |     |    | No > | exclude |
| Organisational/community policies, initiatives and interventions that focus on health and wellbeing, supporting older workers, retirement planning and training, and/or counteracting/challenging ageism |     |    | No > | exclude |
| Issues relevant to the economic evaluation   |     |    | No > | exclude |

Does the study focus on:

|   | Yes | No |       |         |
|---|-----|----|-------|---------|
| Changes to employment/health and safety legislation   |     |    | Yes > | exclude |
| Changes to organisational structure   |     |    | Yes > | exclude |
| Activities for line managers that are NOT about training/mentoring to help managers manage older workers/counteract ageism/assist pre-retirement planning |     |    | Yes > | exclude |
| Whole workforce interventions that focus on physical activity, mental wellbeing, smoking cessation and long-term sickness absence/returning to work       |     |    | Yes > | exclude |
| Interventions/support that employees can access on their own  |     |    | Yes > | exclude |
| Statutory provision to employees  |     |    | Yes > | exclude |
| Does the study focus on chronic illnesses (without considering prevention and specific effects on over 50s )  |     |    | Yes > | exclude |

## Intervention

Does the study examine:

Employees over 50

Entire workforces where at least 51% of employees are over 50

How interventions targeted at 'older' workers under 50 may impact on them at over 50,?

Interventions commissioned by organisations, but delivered by third party organisations

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |
|     |    |

No > exclude

No > exclude

No > exclude

No > exclude

## Study information

For RQ1 and RQ2, does the study:

Employ qualitative methodology

Examine the effect/impact on health and wellbeing

Include an explicit measure of health and wellbeing

Clearly explain its methodology

Include control group and/or have more than one measure point

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |
|     |    |
|     |    |

No > exclude

For RQ3 does the study:

Include one of the following: document analysis, focus groups, interviews, observations, cross-sectional survey logy

Clearly explain its methodology

Make its evidence explicit

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |

No > exclude

No > exclude

No > exclude

### Other information

Is the study:

A review

Experimental/observational

Economic

Qualitative

A book

NB can have more than one study type

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |
|     |    |
|     |    |

Is the study set in:

USA?

UK?

Europe?

Other OECD?

Multiple eligible locations?

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |
|     |    |
|     |    |

Which RQ is the paper relevant for?

RQ1

RQ2

RQ3

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |

Is the study:

An economic evaluation

A systematic review/meta-analysis

A book/book chapter

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |

For RQ1 and RQ 2, does the study have:

A control group

Two or more time measure points

| Yes | No |
|-----|----|
|     |    |
|     |    |

Does the sample:

Include/focus on volunteers

| Yes | No |
|-----|----|
|     |    |

## Appendix 4: Sample search strategies

MEDLINE 1996 to July 2014 (via OVID)

Search strategy 5 August 2014

| Set | Searches   | Results |
|-----|--|---------|
| 1   | (over adj2 "50").ti,ab.  | 9908    |
| 2   | (over adj2 "55").ti,ab.  | 1277    |
| 3   | (over adj2 "60").ti,ab.  | 7445    |
| 4   | (over adj2 "65").ti,ab.  | 4672    |
| 5   | ((age* or old* or elder* or grey or silver or pensioner or senior) adj (worker* or employee* or people* or person* or woman or women or man or men or colleague* or earner* or operative* or volunteer* or population* or workforce or staff* or labourer* or laborer* or executive* or manager* or administrator* or personnel)).ti,ab. | 190687  |
| 6   | "third age*".ti,ab.  | 229     |
| 7   | "baby boomer*".ti,ab.  | 662     |
| 8   | (later adj2 life adj4 (worker* or employee* or people* or person* or woman or women or man or men or colleague* or earner* or operative* or volunteer* or population* or workforce or staff* or labourer* or laborer* or executive* or manager* or administrator* or personnel)).ti,ab.  | 308     |
| 9   | (aged/ or middle aged/) and (worker* or employee* or people* or person* or woman or women or man or men or colleague* or earner* or operative* or volunteer* or population* or workforce or staff* or labourer* or laborer* or executive* or manager* or administrator* or personnel).ti,ab.   | 787984  |
| 10  | (third adj2 (career* or job*)).ti,ab.  | 25      |
| 11  | ((age* or old* or elder* or grey or silver or pensioner or senior) adj2 (nurse* or physician* or doctor* or therapist* or paramedic* or surgeon* or dentist* or midwife or midwives or pharmacist* or lawyer* or teacher* or professor* or academic* or firefighter* or ambulance* or police* or miner* or driver* or trucker*)).ti,ab.  | 7416    |
| 12  | (middle adj age* adj (worker* or employee* or people* or person* or woman or women or man or men or colleague* or earner* or operative* or volunteer* or population* or workforce or staff* or labourer* or laborer* or executive* or  | 5905    |

|    |   |        |
|----|---|--------|
|    | manager* or administrator* or personnel)).ti,ab.  |        |
|    | (exp occupational groups/ or exp administrative personnel/ or exp clergy/ or exp<br>doulas/ or exp ethicists/ or exp faculty/ or exp emergency responders/ or exp foreign<br>professional personnel/ or exp health personnel/ or exp allied health personnel/ or<br>exp anatomists/ or exp caregivers/ or exp "coroners and medical examiners"/ or exp<br>dental staff/ or exp dentists/ or exp faculty, dental/ or exp faculty, medical/ or exp<br>faculty, nursing/ or exp health educators/ or exp health facility administrators/ or<br>exp infection control practitioners/ or exp medical chaperones/ or exp medical<br>laboratory personnel/ or exp medical staff/ or exp nurses/ or exp nurse<br>administrators/ or exp nurse anesthetists/ or exp nurse clinicians/ or exp nurse<br>midwives/ or exp nurse practitioners/ or exp nurses, community health/ or exp<br>nurses, international/ or exp nurses, male/ or exp nurses, public health/ or exp<br>nursing staff/ or exp personnel, hospital/ or exp pharmacists/ or exp physician<br>executives/ or exp physicians/ or exp veterinarians/ or exp inventors/ or exp<br>laboratory personnel/ or exp lawyers/ or exp librarians/ or exp military personnel/ or<br>exp "missions and missionaries"/ or exp police/ or exp research personnel/) and<br>(age* or old* or elder* or grey or silver or pensioner or senior).ti,ab. | 34746  |
| 13 |   |        |
| 14 | exp Workplace/ or exp Employment/ or exp Work/ or exp Industry/   | 193247 |
| 15 | ((job* or employ* or work*) adj (place* or site* or setting* or location* or<br>organisation* or organization*)).ti,ab.   | 4719   |
| 16 | (workplace* or business* or shop* or factory or factories or company or companies<br>or office* or industry or industries).ti,ab.   | 149591 |
| 17 | exp Retirement/   | 3648   |
| 18 | (retirement or retired or unretirement or redeployment).ti,ab.  | 7176   |
| 19 | ((retire* or pre-retire* or unretire*) adj2 (revers* or plan* or decision* or delay* or<br>adjust* or late* or post*)).ti,ab.   | 588    |
| 20 | ((work or employment or flex* or retire*) adj2 transition).ti,ab.   | 244    |
| 21 | ((flex* or part-time or "part time") adj4 (career* or employ* or work* or time* or<br>job* or hour* or intervention*)).ti,ab.   | 5303   |
| 22 | ((third or 3rd or encore or bridge) adj (work or career* or job* or employ*)).ti,ab.  | 76     |
| 23 | "fourth pillar".ti,ab.  | 6      |
| 24 | ((regulat* or adapt* or adjust* or change* or modif* or redesign* or re-design*)<br>adj2 (premise* or building* or work* or equipment or office* or shop* or industry<br>or industries or factory or factories or company or companies or practice* or hour*<br>or responsib* or environment* or job*)).ti,ab.  | 28260  |
| 25 | (reasonable adj1 adjustment*).ti,ab.  | 33     |
| 26 | (job* adj2 design).ti,ab.   | 119    |
| 27 | ((employ* or work* or job*) adj3 (training or mentor*)).ti,ab.  | 4947   |
| 28 | ((employ* or work* or job*) adj2 (pattern* or shift* or rota* or roster*)).ti,ab.   | 4828   |
| 29 | ((welfare or pension* or benefit* or tax* or work or employment) adj4 (barrier* or<br>facilitat* or incentive* or disincentive* or penalt*)).ti,ab.   | 3641   |
| 30 | Ageism/ or (ageism or (age adj2 discriminat*)).ti,ab.   | 682    |
| 31 | ((job* or work* or employ*) adj2 (shar* or return*)).ti,ab.   | 5950   |

|    |   |        |
|----|---|--------|
| 32 | (engage* and (civi* or job* or work* or employ* or staff* or worker* or workforce*)).ti,ab.   | 13168  |
| 33 | (performance adj2 manage*).ti,ab.   | 645    |
| 34 | (recruit* adj4 (civi* or job* or work* or employ* or staff* or worker* or workforce*)).ti,ab.   | 2503   |
| 35 | exp "Personnel Staffing and Scheduling"/ and (age* or old* or elder* or grey or silver or pensioner or senior).ti,ab.   | 970    |
| 36 | exp Accidents, Occupational/ and (age* or old* or elder* or grey or silver or pensioner or senior).ti,ab.   | 1531   |
| 37 | exp Occupational Diseases/ and (age* or old* or elder* or grey or silver or pensioner or senior).ti,ab.   | 8842   |
| 38 | ((retention or retain) adj4 (worker* or employee* or people* or person* or woman or women or man or men or colleague* or earner* or operative* or volunteer* or population* or workforce or staff*)).ti,ab. | 2069   |
| 39 | 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13   | 890363 |
| 40 | 14 or 15 or 16  | 311640 |
| 41 | 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38  | 86767  |
| 42 | 39 and 40 and 41  | 7574   |
| 43 | limit 42 to (english language and humans and yr="2000 -Current")  | 5781   |

**Notes:**

Set 11 is a free-text search for a number of key professions, including health service personnel, which might not be picked up by using the generic words such as worker or staff

Set 39 represents older workers.

Set 40 represents the workplace

Set 41 covers workplace interventions

Set 42 combines all these three sets

and set 43 limits the results to English language, Humans and 2000 to current.

So set 43 is the results to be downloaded to EndNote and sifted there.

## Appendix 5: Bibliography - Excluded Studies and Reasons for Exclusion

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### Population

### Publication Details

### Setting

*Not set in one of the designated countries (see Appendix 2) or did not focus on workers or a workplace*

### Relevance

De Vaus, D., Wells, Y., Kendig, H., & Quine, S. (2007). Does gradual retirement have better outcomes than abrupt retirement? Results from an Australian panel study. *Ageing and Society*, 27(05), 667-682.

Gould, R. (2006). Choice or Chance—Late Retirement in Finland. *Social Policy and Society*, 5(04), 519-531.

Schultz, K. and Adams, G. (2007) *Aging and Work in the 21st Century*. Mahway, NJ: Lawrence Erlbaum Associates

### Focus

Calvo, E., Sarkisian, N., & Tamborini, C. R. (2013). Causal effects of retirement timing on subjective physical and emotional health. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 68(1), 73-84.

Coile, C. C., & Levine, P. B. (2007). Labor market shocks and retirement: Do government programs matter?. *Journal of Public Economics*, 91(10), 1902-1919.

### Intervention

*Did not study workers over fifty (at least 51% of the population), or the impact of interventions on workers over fifty*

Friis, K., Ekholm, O., Hundrup, Y. A., Obel, E. B., & Grønbaek, M. (2007). Influence of health, lifestyle, working conditions, and sociodemography on early retirement among nurses: The Danish Nurse Cohort Study. *Scandinavian journal of public health*, 35(1), 23-30.

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Griffin, B., Loe, D., & Hesketh, B. (2012). Using Proactivity, Time Discounting, and the Theory of Planned Behavior to Identify Predictors of Retirement Planning. *Educational Gerontology*, 38(12), 877-889.

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Montizaan, R., Cörvers, F., & de Grip, A. (2013). Training and retirement patterns. *Applied Economics*, 45(15), 1991-1999.

Oakman, J. and Howie, L. (2013) How can organisations influence their older employees' decision of when to retire?, *Work* 45, 389–397

van der Heide, I., van Rijn, R. M., Robroek, S. J., Burdorf, A., & Proper, K. I. (2013). Is retirement good for your health? A systematic review of longitudinal studies. *BMC public health*, 13(1), 1180.

Wright, R. (2012). Paying for retirement: Sex differences in inclusion in employer-provided retirement plans. *The Gerontologist*, 52(2), 231-244.

## Methodology

*Qualitative study, did not explicitly measure health and wellbeing, unclear methodology, no control group or longitudinal element*

Yen, L., Schultz, A. B., McDonald, T., Champagne, L., & Edington, D. W. (2006). Participation in employer-sponsored wellness programs before and after retirement. *American journal of health behavior*, 30(1), 27-38.

## Appendix 6: References

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Bloomer E (2014) *Local action on health inequalities: Increasing employment opportunities and retention for older people*, Public Health England. Cacioppo, J. and Patrick, W. (2008) *Loneliness: Human Nature and the Need for Social Connection*. New York: Norton & Company.

Clark, R. Morill, M.S. and Allen, S.G. (2009). *Employer-provided retirement planning programs*. Working paper : North Carolina State University.

Crawford J, Graveling R, Cowie H, Dixon K, MacCalman L (2009), The health, safety, and health promotion needs of older workers. An evidence-based review and guidance. Report submitted to the IOSH Research Committee. IOSH.

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Hsu Y-S (2013). Training Older Workers –A Review. In: *Aging, Work and Society* (Field J, Burke RJ and Cooper CL (edit). The Sage Publications, London

Kunze F and Boehm SA (2013). Research on Age Diversity in the Workforce: Current Trends and Future Research Directions. In: Field J, Burke R and Cooper CL (edit.): *Ageing Work and Society*. Sage Publications.

Macleod A., Worman D., Wilton P., Woodman P. and Hutchings P. (2010) 'Managing an ageing workforce – How employers are adapting to an older labour market'. Chartered Institute of Personnel and Development/ Chartered Management Institute Research Report, London: CIPD.

Marmot M (2010) *Fair Society, Healthy Lives: The Marmot Review*, [HYPERLINK "http://www.ucl.ac.uk/marmotreview"](http://www.ucl.ac.uk/marmotreview) [www.ucl.ac.uk/marmotreview](http://www.ucl.ac.uk/marmotreview), February 2010

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Parry E and Harris L (Dec 2011). The Employment Relations: Challenges of an Ageing Workforce. Acas Future of Workplace Relations, Discussion paper series Sinclair D, Watson J, Beach B (2013), Working Longer: An EU perspective. ILC-UK

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Taylor P (2007), Employment and labour market policies for an ageing workforce and initiatives at the workplace. National overview report: United Kingdom. European Foundation for the Improvement of Living and Working Conditions.

Topa, G., Moriano, J.A., Depolo, M., Alcover, C., Morales, J.F. (2009). Antecedents and consequences of retirement planning and decision-making. *Journal of Vocational Behavior*, 75(1), 38-55.

Vaughan-Jones H, Barham L (2010). *Healthy Work; Evidence into Action*. The Oxford Health Alliance, The Work Foundation and RAND Europe, available at HYPERLINK "http://www.bupa.com" <http://www.bupa.com>

Waddell, G., & Burton, A. K. (2006). *Is work good for your health and wellbeing?* London: Department for Work and Pensions.