

**Avoiding long-term incapacity for work:
Developing an early intervention in primary care**

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A report of scoping work carried out by the Peninsula Medical School,
Primary Care Research Group, on behalf of the Department for Work and
Pensions (Health Work and Wellbeing)



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Abbreviations used in the report

CBT	Cognitive behavioural therapy
CCT	Non-randomised controlled trial
COPD	Chronic obstructive pulmonary disease
CPN	Community psychiatric nurse
DWP	Department for Work and Pensions
JRRP	Job Retention and Rehabilitation Pilot
MBR	Multidisciplinary biopsychosocial rehabilitation
MRC	Medical Research Council
NHS	National Health Service
NHMP	Non-medical health professional
RAM	RAND Corporation/University of California Los Angeles (UCLA) Appropriateness Method
RCT	Randomised controlled trial
RTW	Return to work

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Executive Summary

- Sickness related absence from work represents a major problem for the UK economy. For individuals affected, prolonged absences are associated with major adverse effects for the individual and their family.
- In the UK, the general practitioner has a central role in the process of sickness related certification of absence from work.
- A number of models have been proposed for schemes supporting the early assessment of individuals with a view to supporting them in returning to work following periods of sickness related certification of absence from work.
- This research represents a brief scoping study on how a pilot, concentrating on a primary care led intervention in health and work, might look, and how it could be evaluated with the greatest value to policy makers in government and the NHS.
- The research reports a review of relevant scientific literature and the results of a stakeholder consultation held with general practitioners.
- A preliminary service model was proposed, developed and refined using an iterative process during the course of the research.
- Analysis and summaries are contained throughout the report in relevant sections and the recommendations flowing from this are brought together in the last section.

For patients with back pain

- There is moderate-strong evidence that multidisciplinary rehabilitation is more effective in reducing adverse outcomes than usual care or single intervention elements alone for back pain of 4-12 weeks' duration.
- There is no clear evidence about the optimum content of multidisciplinary programmes for low back pain but there is agreement that rehabilitation should be based on a biopsychosocial model which addresses the health condition, personal or psychological factors and organisational or social obstacles to return to work.
- It is likely that the optimal intervention would have a return to work focus and include exercise, cognitive-behavioural, organisational and educational elements.
- It is recommended that interventions should be offered as soon as possible for patients who have been off work for four weeks or more.

- There is some evidence that more intensive multidisciplinary rehabilitation programmes are more effective than less intensive multidisciplinary rehabilitation programmes in supporting return to work.
- Successful rehabilitation requires effective communication and active collaboration between health care professionals, the workplace and the individual worker.

For patients with musculoskeletal problems other than back pain

- Many of the systematic reviews found inconclusive or limited evidence for the effectiveness of interventions.
- There is general consensus that a multidisciplinary biopsychosocial approach would be appropriate.
- There is some support that useful components of a multidisciplinary intervention would include: exercise/physical training, psychological, organisational and educational interventions.
- There is a need for further high quality research on the optimum nature and content of multidisciplinary interventions for musculoskeletal problems, other than back pain.

For patients with mental health problems and stress

- It is widely agreed in principle that mental health rehabilitation should be based on a biopsychosocial approach.
- There is no robust evidence on the optimum content of a multidisciplinary rehabilitation intervention.
- There is strong evidence that cognitive-behavioural therapy (CBT) interventions are effective.
- There is moderate evidence that brief therapeutic interventions are effective for employees experiencing job-related distress.
- There is limited evidence that exercise may be effective in reducing clinically-relevant adverse outcomes.
- There is evidence that supported employment programmes for people with severe mental illnesses are more effective in reducing adverse outcomes than pre-vocational training programmes.
- Training and organisational interventions can be successful in improving psychological health and reducing sickness absence.

For patients with cardio-respiratory problems

- There is broad consensus that cardio-respiratory rehabilitation should be based on a biopsychosocial model.
- There is strong evidence that cardiac rehabilitation improves clinical outcomes for hospital patients after major cardiac events.
- There is consensus that cardiac rehabilitation programmes should include a combination of the following elements: exercise training; educational counselling; risk factor modification; vocational guidance; psychosocial interventions; relaxation and stress management training.
- There is insufficient evidence on the effect of cardiac rehabilitation in respect of vocational outcomes, less severe cardiac or respiratory disorders, or on the effectiveness of self-management education programmes for chronic obstructive pulmonary disease (COPD).

For patients with other health problems

- There is strong evidence that formal multidisciplinary rehabilitation is beneficial for patients with moderate to severe brain injury. There is some evidence that continued intervention, particularly with more intensive programmes, helps to sustain functional gains made in early post-acute rehabilitation and specialist multidisciplinary community rehabilitation can provide additional functional gains.
- There is strong evidence that patients with mild brain injury make a good recovery with provision of appropriate information, without any additional specific intervention.
- There is moderate-strong evidence that modified work programmes help injured workers return to work.
- There was some evidence that modified work programmes are also cost-effective for employees with work-related injuries.
- There is only limited evidence for the effectiveness of vocational rehabilitation programmes for workers with chronic rheumatic diseases.

Stakeholder consultation

- Based on findings from the stakeholder panel, it is possible to highlight appropriate components of an intervention to facilitate early return to work for those at Med3 or Med5 Sickness Certification stage.
- An intervention to facilitate early return to work was judged appropriate for the following groups of patients:

- for a wider range of clinical indications in patients with musculoskeletal conditions as compared to mental health or cardio-vascular conditions;
 - those with mild/ moderate symptoms rather than those with severe symptoms;
 - those with symptoms lasting one month or longer;
 - those not already receiving/ awaiting specialist health care or interventions for their medical condition;
 - those on repeat, recurrent or extended sickness certification rather than those on their first sickness certification;
 - those without access to an occupational health service;
 - those who have been on sickness certification for 7 weeks or longer or those certified for 4-6 weeks if they do not have access to an occupational health service.
- It was judged appropriate for an intervention to facilitate early return to work to:
 - provide a combination of biopsychosocial and vocational support as opposed to just vocational support;
 - be delivered either by a multidisciplinary team, or a single healthcare professional or specialist;
 - provide priority access to required health and social care services for those receiving sickness certification over and above the general population in need of such services;
 - be located in a Department for Work and Pensions facility;
 - accept referrals from healthcare professionals and self-referrals from patients;
 - involve direct joint working between the employer and intervention service to implement appropriate work modifications;
 - provide access to clinical skills such as a physiotherapist; an occupational therapist; a health professional trained in specific psychological techniques (CBT); a clinical psychologist; an occupational health specialist; and non-clinical skills such as a return to work coordinator to assist with vocational issues; and a representative with knowledge of social security issues and benefits system.

Conclusions and Recommendations

- There is support, both in the research literature and from the general practitioner panel, for an early intervention to help sick-certified individuals to return to work.
- There is strong evidence that the intervention should combine biopsychosocial and vocational rehabilitation.
- There is support for the intervention being delivered by a multidisciplinary team or by a single healthcare professional or specialist with relevant multidisciplinary skills.

- Referrals are potentially best made by 7 weeks of certified sickness absence, but not prior to 4 weeks.
- Referrals to the intervention service are likely to be appropriate from any healthcare professional either inside or outside the NHS or from patients themselves. Referrals from employers may be less appropriate.
- There was support among the general practitioner panel for locating the intervention within a DWP facility but some disagreement over the appropriateness of basing the service within primary care.
- Any service model should facilitate timely access to relevant multi-professional input based on the individual's needs.
- The stakeholder consultation has focused predominantly on the views of general practitioners in the South West of England.
- The views of other stakeholders (e.g. potential service users, other healthcare professionals, employers) have not yet been obtained.
- More work is required to further develop the service model and evaluate its utility, acceptability and cost-effectiveness. An appropriate model would invoke the MRC framework for development and evaluation of complex interventions. We have proposed a number of specific areas suitable for further research.

1: Background and overview of the project

Demographic changes in the UK, along with substantial shifts in personal expectations around working practices, have placed enormous pressure on the UK employment base. Compounding these, the progression of individuals from periods of brief absence from work on account of illness to periods of longer-term incapacity, and finally chronic incapacity for work, represents a further and major problem for UK employers and society. There is growing concern over sickness-related absence from work and its implications to labour productivity and cost to the economy, as well as the impact on the health and well-being of the individual and their family.

A comprehensive review by Waddell & Burton in 2006,¹ exploring the relationship between work, health and well-being, concluded that there is strong evidence that, for most people, “work is generally good for physical and mental health and well-being (p. ix). Being in safe and secure employment affords the individual a number of economic, social and psychological benefits. There is also strong evidence that worklessness is associated with higher mortality, poorer physical health and disability, poorer mental health and greater use of health care resources – and that this association cannot be completely accounted for by a simple health selection effect. In fact, re-employment is associated with an improvement in self-esteem and in physical and mental health that is comparable to the adverse effects of job loss.

In 2005, the UK Government published its strategy² for improving the health and well-being of the working age population. The key benefits envisaged were to help: (i) employees obtain early and appropriate treatment so that they can, where possible, remain in work; (ii) people who are out of work due to ill health to access appropriate support in managing their condition and returning to work; and (iii) people avoid work-related health problems by improving access to good quality occupational health advice.

In the UK, employees can self-certificate for absences that last between 1 and 7 days. Doctors can issue a sickness certificate (Med3 or Med5) after 7 or more consecutive days of absence after which the employee will receive Statutory Sick Pay for up to 28 weeks. After an absence of more than 28 weeks, an employee who is still unfit for work may then (through Med4 certification) enter the welfare benefit system. It has been estimated that approximately 3,000 people a week move from Statutory Sick Pay to Incapacity Benefit.³

Shiels *et al*⁴ investigated the trends in the early stages of sickness certification. Their study included nine urban and rural practices (87 general practitioners) within the Mersey Primary Care Research & Development Consortium, who provided care for over 50,000 patients of working age. Over a period of a year, 13,127 Med3 and Med5 certificates were issued to 6,271 patients. These figures suggest that, in an average year, 12.5% of patients of working age will require Med3 or Med5 certification. For an average general practice (with a list size of 6,000 working age patients) this equates to approximately 750 patients per year. Furthermore, half of those issued a Med3 or Med5 will require more than one certificate.

In the study by Shiels *et al*,⁴ the average duration of sickness episodes was 9.9 weeks. Nearly 10% of their claimants exceeded 28 weeks of certified sickness absence from work. For an average-sized practice this could equate to approximately 70 working-aged patients per year on long term sickness absence.

It has been estimated that absence from work due to sickness costs around £12 billion each year.² Statistics available at the time of recent Government announcements about proposed Incapacity Benefit reforms indicate that 2.7 million people are currently claiming £7.4 billion in Incapacity Benefits. In February 2007, 7% of the working population in England and Wales were claiming Incapacity Benefit and over 87% had been claiming for over a year.⁵

Common health problems now account for the most disability and sickness absence, whether measured from general practitioner sickness certification data, employers' rankings of causes of sickness absence or incapacity benefit claim statistics.⁶ These include mental health conditions (particularly depression, anxiety and stress), back pain and other musculoskeletal conditions, and circulatory or respiratory conditions.

According to Waddell & Burton,¹ there is consensus across a wide range of stakeholders that, whenever possible, sick and disabled people should be encouraged and supported to remain in or return to work as soon as possible – and this is particularly the case for those with common health problems. The underlying assumption for this view is that returning to work helps to promote recovery and rehabilitation, improves quality of life and reduces the risks of long-term sickness absence, which is associated with negative physical, psychological, social and economic outcomes.

Within the present system, the employee's general practitioner is typically the main gatekeeper to the Statutory Sick Pay system, who also contributes to the decision-making process for entry into the Incapacity Benefit system after sickness absence lasting more than 28 weeks.

Research conducted on behalf of the DWP⁷ highlights the complexity of the general practitioner's role in judging whether a patient is fit for work and the difficulties in deciding whether to issue or extend a sickness certificate. In addition, there are a number of interrelated factors which may influence the sickness certification process – for example, the patient's own behaviour, attitudes and expectations, the nature of the patient's work, inadequate consultation times, how well the general practitioner knows the patient, the availability of specialist occupational advice, and difficulties in balancing their relationship of trust with the patient with the general practitioner's obligation to the benefits system and employers.

Consequently, there appears to be variation in general practice around sickness certification and in the initiation of discussions about returning to work. In the DWP report⁷, one of the commonly suggested solutions for supporting general practitioners in their sickness certification role was to establish a specialist occupational health resource to which general practitioners could refer their patients at an early stage of their sickness absence for help in assessing their ability to work and facilitating their return to work. General practitioners reported that, although they often made referrals to other NHS services, these rarely had a work rehabilitation focus. There was also limited awareness amongst general practitioners of rehabilitation schemes provided by JobCentre Plus. Many general practitioners called for more employment-based occupational health services, and a more widespread service that smaller employers could 'buy into' when they did not offer occupational health services to employees.

The possibility of other healthcare professionals becoming involved in the sickness certification process has been explored.⁸ Overall, the majority of 1,002 non-medical healthcare professionals (NMHPs) surveyed – particularly osteopaths/chiropractors (88% of those surveyed), physiotherapists (72%), primary care nurse practitioners (83%), and A&E nurse practitioners (74%) – were in favour of this expansion of their role, viewing it as a way of enhancing patient care and reducing the pressure on general practitioners. With the provision of appropriate training and guidelines, many NMHPs were confident they could provide fitness for work advice and assessments (particularly for less complex cases), although they were aware of the implications of doing so on their workload and their relationships with patients. One of the recommendations made by the research report⁸ was to consider the use of a multidisciplinary team approach, whereby a general practitioner might conduct the initial consultation with the patient, but then has the option of referring the patient on to another relevant health professional (e.g. physiotherapist), where appropriate, for subsequent sickness absence consultations.

Research commissioned by the DWP⁹ has also explored the management of sickness absence from the employers' perspective. In-depth interviews with 53 representatives from 22 public, private and voluntary sector organisations across the UK suggest that many organisations are keen to retain staff on long-term sickness and are willing to make adjustments to the employee's working conditions and workplace to assist an early return to work. Some larger organisations had an occupational health service and some could provide access to key services such as physiotherapy and counselling where needed. However, a significant number of UK employees work for smaller organisations that do not have access to specialist occupational health or rehabilitation services.¹⁰ Employers who participated in the DWP research⁹ highlighted the need for best practice guidance and for more information on what help is available to organisations to support staff back into work, as well as faster access to NHS services, improved communication and responsiveness to needs.

In recent years, the DWP has piloted two schemes ('Job Retention and Rehabilitation Pilot' and 'Pathways to Work Scheme') which aim to assist sick-certified individuals back into work, whilst receiving either Statutory Sick Pay¹¹ or Incapacity Benefit.¹²

The recent 'Job Retention and Rehabilitation Pilot',¹¹ conducted in six areas of the United Kingdom, compared work-related outcomes for 2,845 volunteers who had been off work sick for between 6 and 26 weeks with a range of common health problems. Participants were randomly allocated to either:

- a *workplace intervention*, addressing the individual's workplace issues – including, for example, an ergonomic assessment, graded return-to-work, or employer liaison/mediation;
- a *health intervention*, addressing the individual's health issues – including, for example, physiotherapy, complementary therapy, psychotherapy, or referral to a medical specialist;
- a *combined health and workplace intervention*, addressing both workplace and health issues; or
- a *control group*, who received no formal intervention.

The results showed that none of the three interventions improved return to work, with similar proportions of participants (44% to 45%) in each of the four groups returning to work for at least 13 consecutive weeks (the primary outcome). In addition, no significant impact was found on other work-related outcomes (e.g. number of weeks out

of work, numbers in receipt of Incapacity Benefit). Furthermore, there was some evidence that, for participants who had originally expected to be able to do the same job in six months' time, the interventions may actually have had a detrimental effect on their subsequent return to work. It has been suggested that the interventions offered may not always have adequately addressed the full range of clients' needs and did not encourage them to be proactive in their return to work process. Those providing the interventions also reported external barriers – e.g. from employers, general practitioners and other health services – which reduced the chances of a successful return to work. Furthermore, the reasons why clients returned to work were often beyond the control of the service providers – e.g. financial pressures, fears about job loss; seeing work as a way of improving psychological wellbeing.

The DWP has recently widened their pilot of a 'Pathways to Work Scheme' for individuals in receipt of Incapacity Benefit. This scheme is funded by local primary care trusts and based in JobCentre Plus facilities. Under the scheme, claimants are required to attend a work-focused interview within 8 weeks of receiving Incapacity Benefit (i.e. some 36 weeks after first being absent from work) and follow-up sessions with a trained advisor. They also have the opportunity to participate in a 'Conditions Management Programme', carried out in collaboration with the NHS. The programme lasts approximately 14 weeks, adopts an individually-tailored approach and provides access to exercise, cognitive behavioural techniques and educational based activities which aim to assist the individual back into paid employment. Early reports are positive in terms of the scheme helping Incapacity Benefit recipients to find work and its acceptability to customers and staff.¹²

Overview of the current project

In July 2007, Dame Professor Carol Black, the National Director for Health and Work, invited the Peninsula Medical School, Primary Care Research Group, to conduct a brief *"scoping study on how a pilot, concentrating on a primary care led ... [early] ... intervention in health and work, would look and how it could be evaluated with the greatest value to policy makers in government and the NHS"*.

The scoping work began in September 2007, with the aim of reporting back to Dame Professor Black in December 2007. Given the timescale and resources available, the project has adopted a mixed methods approach to develop a primary care based, early intervention model via:

- A review of the relevant scientific literature (see Chapter 2); and
- Consultation with relevant stakeholders (see Chapter 3), using the following two methods:
 - initial in-depth interviews with a small number of general practitioners and occupational health/human resources representatives from a small number of employers; and
 - an online survey (using an adapted RAND/UCLA process¹³) involving a wider panel of general practitioners.

A preliminary service model was developed using information obtained via the literature review and initial in-depth interviews with stakeholders. This service model was then further refined in terms of its appropriateness to clinical practice through two rounds of consultation with the general practitioner stakeholder panel.

2: Report on the literature review

Objectives

The objectives of the literature review were to:

- (a) establish the range/strength of existing evidence for the effectiveness of interventions to help sick-certified individuals with a range of common health problems to return to work;
- (b) determine the nature and content of such interventions – e.g. how many and what components they included; their timing, duration and intensity;
- (c) ascertain the professional skill mix typically involved in delivering return to work interventions; and
- (d) identify any gaps or inconsistencies in the existing scientific literature.

The data synthesised from the literature review informed the development of a preliminary service model of a primary care-led early intervention to help sick-certified individuals return to work. A summary of the findings of the literature review was also utilised in the stakeholder consultation work which further refined the model (see Chapter 3 and Appendix 3).

Methods

Criteria for considering papers for the review

Given the time and resources available to complete the project, the literature review has included only systematic reviews and meta-analyses, these being the highest level of evidence described in Petticrew & Roberts' paper discussing hierarchies of evidence.¹⁴ Papers that were published in English between 1997 and 2007 and which specifically focused on rehabilitation or return-to-work interventions for working-age adults were included. There was no restriction placed on the type of medical condition that the systematic review or meta-analysis focused on, or on the outcome measures used.

Search methods for identification of papers

The following databases were searched: Pub Med (including Medline), Web of Science, Embase, PsycInfo, CINAHL Plus, British Nursing Index and Cochrane Library (The Cochrane Database of Systematic Reviews).

The full list of search terms used in each of the four main elements is given in Figure 1 below. The search strategy was based on the combination of four main elements: (a) "Sickness absence or return to work" *and* (b) "Intervention or rehabilitation" *and* (c) "Primary care or occupational health setting" *and* (d) "Systematic review or meta-analysis". Thus, only papers which incorporated all four of the main elements (Figure 2 below) were considered for inclusion in the literature review. This core search strategy was modified as necessary for any databases where advanced or more complex searches were not possible.

Figure 1: Full listing of search terms used in the literature review

Element 1 – “Sickness Absence or Return to Work”

Sickness absence
Sickness certification
MED3
Sick leave
Incapacity for work
Prolonged absence
Workplace absence
Absenteeism
Fitness for work
Return to work
Job retention

} OR

AND

Element 2 – “Intervention or Rehabilitation”

Manag*
Intervention*
Treat*
Vocational Rehabilitation
Work rehabilitation
Promoti*
Preventi*
Assess*
Multidisciplinary
Physiotherap*
Psycholog*
Occupational therap*
Cognitive behavioural therap*

} OR

AND

Element 3 – “Primary care or occupational health based”

Primary care
Primary healthcare
Primary health care
Occupational health

} OR

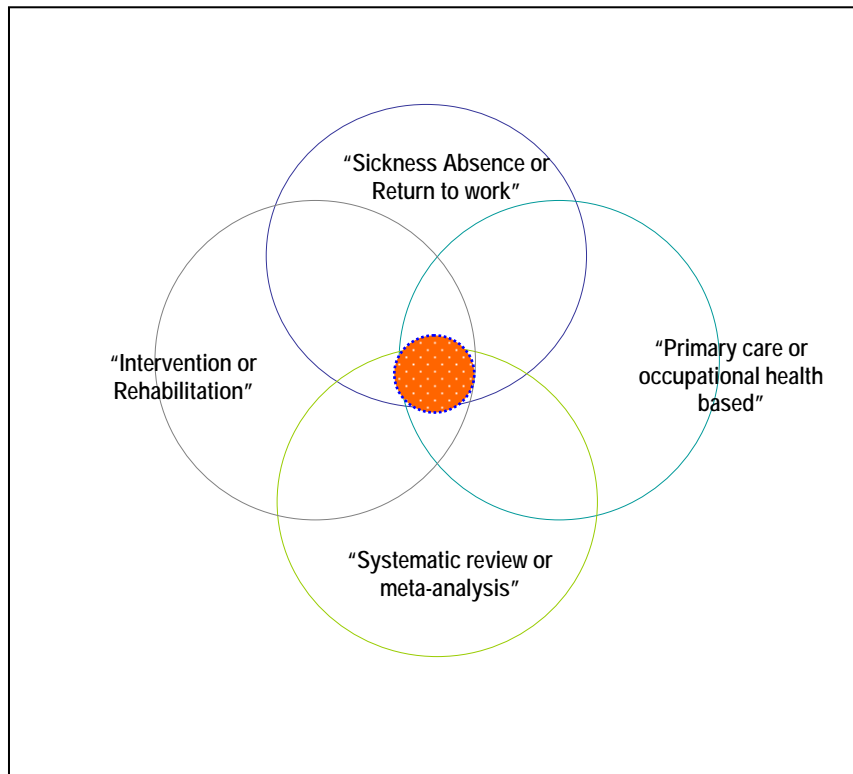
AND

Element 4 – “Systematic review or meta-analysis”

Systemic review
Literature review
Review
Meta-analysis
Meta analysis

} OR

Figure 2: Main elements of the search strategy



Only papers which combined all four of the main elements were considered for the literature review

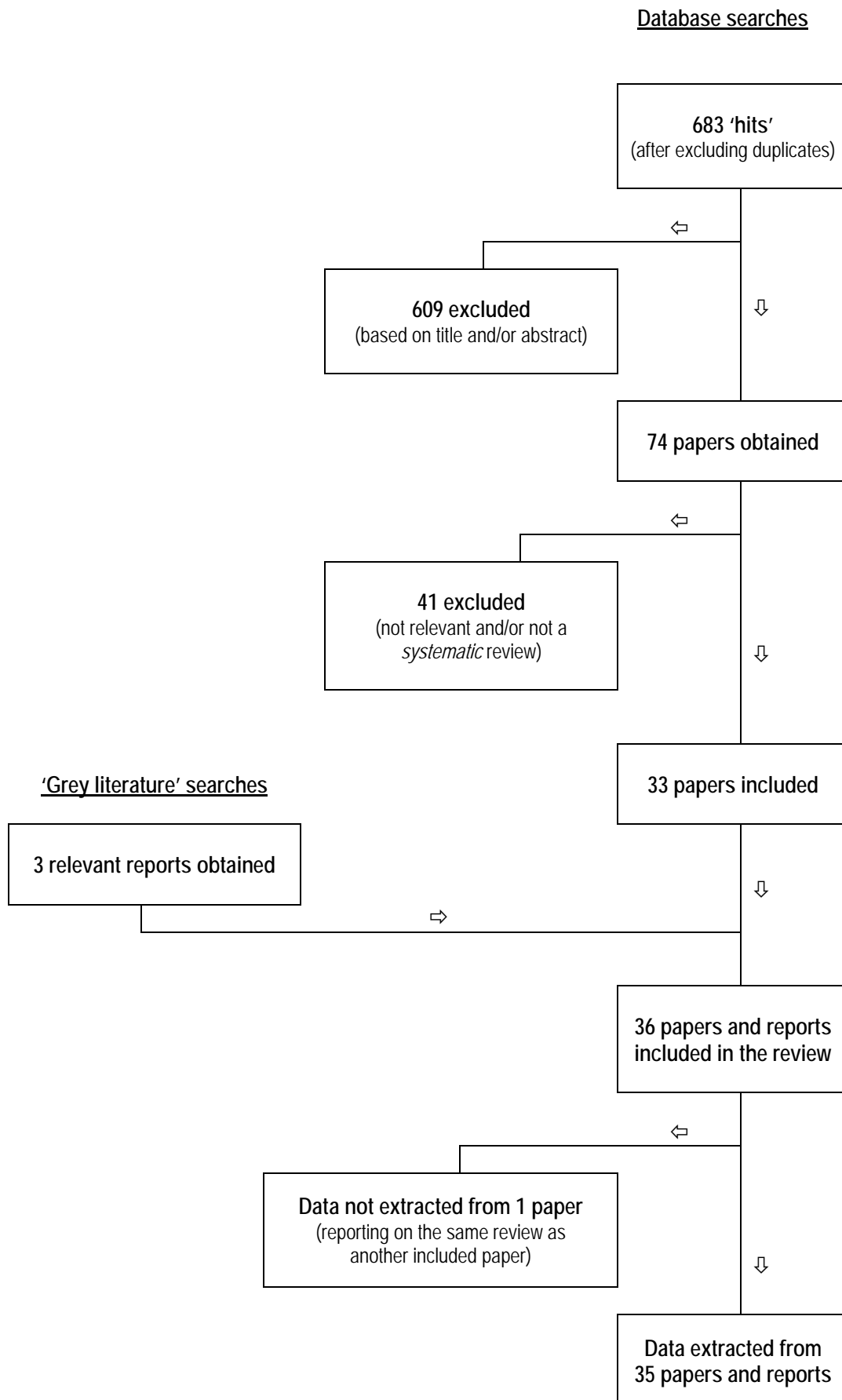
To supplement the published academic literature, additional simple searches were made on the websites of a number of UK organisations for relevant in-house publications (e.g. Department for Work and Pensions; Department of Health; Faculty of Occupational Medicine; National Institute for Health and Clinical Excellence).

Selection of papers

Figure 3 below summarises the process by which appropriate papers were identified and selected, as well as the number of papers excluded at each stage.

The database searches identified a total of 683 potentially relevant papers ("hits"), after the removal of duplicates. One author (CW) conducted an initial screen of the identified papers' titles and abstracts to exclude any obviously irrelevant papers. This stage excluded 609 papers. The remaining 74 papers were obtained and their content examined by one author (CW). At this stage, a further 41 papers were excluded because they did not report a *relevant systematic* review. Thus, a total of 33 papers identified in the databases searches were included in the literature review.¹⁵⁻⁴⁷ In addition, the grey literature searches identified three reports,^{6;48;49} which were also included in the current literature review.

Figure 3: Selection of relevant papers



Data extraction and synthesis

Given the objectives of the review, data extraction focused on the following key data: (i) authors, title and date of publication; (ii) medical condition(s) included; (iii) sample characteristics; (iv) setting(s) of the intervention; (v) number and type of studies included; (vi) nature of the included interventions (definition, complexity of interventions, range of components); (vii) outcome measures used (work-related, clinically-relevant, other); (viii) main conclusions; (ix) quality assessment/limitations of included studies.

Key data were extracted from 35 of the 36 included papers and reports. Two papers^{38;39} reported on the same systematic review of physical and/or work conditioning programmes for back pain and therefore data were extracted from only one³⁹ of the two reports.

Description of included papers

The literature search identified no systematic reviews that focused specifically on *primary care* based interventions aiming to facilitate an early return to work. This gap might be addressed by a further search for and review of papers reporting on individual randomised controlled trials (RCTs) of primary care based return to work interventions (RCTs being the next highest level in Petticrew & Roberts' hierarchy of evidence, after systematic reviews and meta-analyses¹⁴). However, given the available time and resources, this additional literature search was beyond the scope of the current project.

Thus, we have based our report on the evidence available on interventions in other settings (e.g. outpatient or workplace settings) which may also be applicable to primary care.

Range of medical conditions

The majority of systematic reviews reported on interventions for back pain or back disorders (n = 16)^{6;18;21-24;27;29;32;36;37;39;43;44;47;49} and other musculoskeletal disorders (n = 11).^{6;19;20;25;26;28;31;33;40;41;45} A smaller number of systematic reviews reported on mental health and stress (n = 5),^{6;15;17;34;48} cardio-respiratory disorders (n = 2),^{6;35} and other health problems (n = 4).^{16;30;42;46} One report⁶ covered four conditions – back pain, other musculoskeletal problems, mental health and cardio-respiratory problems.

Nature of the interventions

The complexity of interventions included in the reviews varied considerably (both within and across reviews). Thirteen of the reviews focused predominantly on complex, often multidisciplinary or biopsychosocial, rehabilitation programmes (combining two or more components, e.g. physical/exercise interventions, psychological interventions, occupational interventions, education); ten reviews focused predominantly on simple interventions (offering a single component, e.g. exercise alone). Eleven reviews included a mix of simple and more complex interventions.

The duration and intensity of interventions (where reported) also varied quite considerably across the studies included in the reviews, even when they reported broadly similar types of intervention. Few papers were able to give a clear indication of the timing of interventions – i.e. how early in the individual's sickness absence period they tended to begin.

Outcome measures

There was also considerable variation in the outcome measures and follow-up periods used by studies included in the review papers. Studies commonly reported clinically-relevant outcomes (e.g. pain, functioning, disability and global improvement). Other measures (e.g. quality of life, compliance) were also reported.

Faber et al (2006)¹⁹ argued that "... pain, functional disability and ability to work do not improve in the same way", and thus it is important to distinguish between these outcome measures. Some, but not all, of the studies included in the reviews reported work-related outcomes (e.g. return to work rate or status, sick leave duration, absenteeism, employment status).

Given the heterogeneity of their included studies in terms of outcome measures and follow-up periods (as well as the interventions themselves), few of the systematic reviews undertaken also reported the results of meta-analyses. Furthermore, few studies reported data on the cost of delivering the intervention or conducted any analysis of cost-effectiveness.

Levels of evidence

Most of the systematic reviews adopted the following categorisation to describe the level of available evidence. Used in previous systematic reviews in the field,⁵⁰ the approach takes into account the number, quality and outcomes of the individual studies included in the review:

Strong evidence	Provided by generally consistent findings in multiple high-quality RCTs
Moderate evidence	Provided by generally consistent findings in one high quality RCT and one or more low quality RCTs, or by generally consistent findings in multiple low quality RCTs or multiple CCTs
Limited or conflicting evidence	Provided by only one RCT or CCT (either high or low quality) or inconsistent findings in multiple RCTs or CCTs
No evidence	No RCTs or CCTs

Quality and limitations of research

Many authors of the identified systematic reviews and reports raised concerns about the lack of high quality research in the field and commented that the variability across studies made it difficult to draw conclusions about the effectiveness or optimum content of interventions, particularly in terms of their impact on sickness absence and return to work, or their cost-effectiveness.

Results

Building on the review of evidence presented in Waddell & Burton's 2004 report,⁶ we have grouped our results by medical condition, as follows:

- Back problems
- Other musculoskeletal problems
- Mental health problems and stress
- Cardio-respiratory problems
- Other health problems – e.g. rheumatoid disorders, acquired brain injury, work-related injuries

It has been argued⁶ that low back pain may serve as an exemplar for sickness absence interventions because of the prevalence of the condition and the larger body of scientific evidence on rehabilitation relating to it. We therefore focus first on the evidence relating to rehabilitation interventions for back problems (see (i) below) and then report on the available evidence relating to rehabilitation interventions for the remaining health conditions (see (ii) to (v) below).

Tables 1.1 to 1.5 (in Appendix 1) summarise the included reviews and reports by medical condition. In each table, Part (a) provides a basic description of the review papers; Part (b) provides a summary of the range of interventions they reviewed; Part (c) summarises their findings and conclusions.

Back problems

Table 1.1 (Appendix 1) summarises the sixteen papers,^{6;18;21-24;27;29;32;36;37;39;43;44;47;49} which reported on systematic reviews of interventions for back problems. Some reviews included acute, sub-acute and chronic back problems,^{18;22;23;29;39;44} while others focused only on one sub-type (chronic back problems²¹ or sub-acute back problems^{24;27;37}).

Acute low back pain is usually defined as lasting for less than 6 weeks; sub-acute low back pain for between 6 and 12 weeks; and chronic low back pain as persisting for 12 weeks or more.⁵¹ However, in some of the identified systematic reviews the definitions used varied slightly from those given above. In some papers, authors did not appear to distinguish between the individual sub-types^{6;32;37;43;49} and one study focused specifically on post-operative rehabilitation after lumbar disc surgery³⁶.

The vast majority of low back pain is non-specific⁵¹ (or 'simple'), which means it is not attributed to any specific, underlying disease (such as infection, tumour, osteoporosis, ankylosing spondylitis, fracture, inflammatory process, radicular syndrome or cauda equine syndrome) where more defined clinical management is appropriate.

Summary of the evidence

(a) There is moderate-strong evidence that **multidisciplinary rehabilitation** is more effective than usual care or single intervention elements alone for back pain of 4-12 weeks' duration. There is evidence that this approach can:

- help patients return to work sooner
- reduce the amount of sick leave taken in the longer-term
- decrease pain and restore function
- alleviate the patient's feelings of disability

(b) There is no clear evidence about the optimum content of multidisciplinary programmes for low back pain but there is agreement that rehabilitation should be based on a **biopsychosocial model** which addresses the health condition, personal or psychological factors and organisational or social obstacles to return to work.

(c) It is likely that the optimal intervention would have a return to work focus and include:

- an **exercise** or physical conditioning programme
- **cognitive-behavioural** components (e.g. to correct dysfunctional beliefs)
- **organisational** elements (e.g. workplace visits, ergonomic measures, work modification)
- **educational** elements (e.g. back school type education)

(d) It is recommended that interventions should be **offered as soon as possible** for patients who have been off work for 4 weeks or more, to prevent progression to long-term sickness absence.

(e) There is some evidence that **more intensive** multidisciplinary rehabilitation programmes are more effective than less intensive multidisciplinary rehabilitation programmes (and usual care) in terms of *clinically-relevant* outcomes (e.g. restoring function and reducing pain).

(f) There is conflicting evidence regarding the effectiveness of intensive multidisciplinary rehabilitation programmes in terms of *vocational* outcomes (e.g. duration of sickness leave, work readiness).

(g) Successful rehabilitation requires effective communication and active collaboration between health care professionals (in occupational health and in primary care), the workplace and the individual worker.

Multidisciplinary biopsychosocial rehabilitation for back problems

A number of reviews focused on multidisciplinary rehabilitation,^{6;21;24;27;36;43;49} involving a combination of at least two, and often multiple, types of intervention for back problems.

Most reviews focused on the management of *sub-acute or chronic* low back pain of between 4-12 weeks duration.^{6;21;24;27;49} These conclude that there is moderate-strong evidence that multidisciplinary rehabilitation is more effective than usual care^{21;24} or single intervention elements alone⁴⁹ and identify some evidence that the approach helps patients to return to work faster,^{24;27;43} reduces the amount of sick leave taken in the longer-term,^{24;27} reduces pain,²¹ restores function²¹ and alleviates the patient's own feelings of disability.²⁷ There was also limited evidence that multidisciplinary interventions aimed at *preventing* new episodes of back pain were effective.⁴³

Only one review,³⁶ focusing on the post-operative management of patients undergoing *lumbar disc surgery*, concluded that there was limited evidence (based on one poor quality RCT) that multidisciplinary rehabilitation (comprising sessions with a physiotherapist, occupational therapist, psychiatrist, psychologist, social worker and intensive back school) was no more effective than usual care in terms of the amount of sick leave taken, re-operation rates and patient's perceptions of effectiveness.

Content of multidisciplinary interventions for back problems

With regard to the optimum content of multidisciplinary programmes for low back pain, the evidence is less clear⁴⁹, although there is some agreement that these should have a return-to-work focus⁴⁹ and include a combination of optimum clinical management, rehabilitation and organisational interventions.^{27;49} The report by Waddell & Burton (2004)⁶ also argues that programmes should be based on the biopsychosocial model of rehabilitation and incorporate:

- a physical conditioning programme, designed to restore the individual's systemic, neurological, musculoskeletal or cardio-respiratory function;
- significant cognitive-behavioural components (e.g. to correct dysfunctional beliefs); and
- close association with the workplace, with work-related goals and outcomes.

Hlobil *et al*²⁴ suggest that, for *sub-acute* low back pain, the "optimal intervention is probably a mixture of exercise, education, behavioural treatment and ergonomic measures", although their review also points out that, as yet, it is unclear which component or combination of components is most effective.

Karjalainen *et al*²⁷ reported the return-to-work outcomes of two RCTs which compared multidisciplinary rehabilitation with usual care for sub-acute low back pain. In one trial, patients receiving a multidisciplinary intervention (comprising a gradually intensifying exercise programme with an operant-conditioning behavioural approach, a workplace visit and back school type education) returned to work within an average of 12 weeks, compared to almost 20 weeks in the group who received usual care. Similarly, in a second trial, patients who received a combination of occupational and clinical interventions returned to work sooner (within an average of 60 days) than those who received usual care (average of 120 days). Return-to-work was found to be fastest for patients who received the combined occupational and clinical interventions (median 60 days), compared to patients who received only the occupational intervention (median 67

days) or only the clinical intervention (median 131 days), suggesting that a multi-focused intervention is more useful.

Some of the systematic reviews we identified focused on only one type of intervention (e.g. exercise or occupational or educational interventions) for the management of low back pain rather than a complex, multidisciplinary package. These reviews may also be useful in informing the likely content of more complex interventions to facilitate return to work.

(a) *Exercise and physical conditioning programmes*

There is currently no evidence that exercise or physical conditioning programmes are more effective than other treatments in the *acute* phase of back pain (of less than 4 weeks' duration) in terms of reducing pain,^{22;44} improving function,^{22;44} or reducing sickness absence.³⁹

However, reviews focusing on the *sub-acute* phase of low back pain (lasting more than 4 weeks but less than 3 months), suggest that exercise and graded-activity programmes can be effective at improving absenteeism²² and reducing disability.³⁷

Kool *et al*²⁹ reports there is strong evidence that exercise – alone or as part of a multidisciplinary treatment – is more effective than usual care at reducing sickness absence duration for *sub-acute to chronic* low back pain (of four weeks' duration or more). There is evidence that this effect is greater for more severely disabled patients.²⁹ However there is currently insufficient evidence for any longer-term effects on sickness absence (beyond one year follow-up) and no evidence that early interventions are any more effective.²⁹

There is consensus that exercise therapy should play a role in the rehabilitation of patients with *chronic* back problems (lasting more than 3 months) where the aim is to restore normal function, activity and return to work. There is some evidence that exercise therapy at this phase is more effective than usual care^{22;44} and as effective as conventional physiotherapy⁴⁴ in reducing pain and improving function. However, there is no clear evidence whether any specific type of exercise is more effective than others.⁴⁴ There is also evidence that physical conditioning programmes are effective at reducing the duration of sickness absence (by an average of 45 days at 1 year follow up),³⁹ especially if these employ a cognitive-behavioural approach, are work-related, delivered or supervised by a physiotherapist or multidisciplinary team and include intensive physical training (incorporating a range of exercises to improve aerobic capacity, muscle strength, endurance and coordination).³⁹

Ostelo *et al*³⁶ found strong evidence that intensive exercise programmes starting 4-6 weeks *after lumbar disc surgery* were more effective in the short term than mild exercise programmes in improving function and facilitating return to work.³⁶ There was also limited evidence that low-tech and high-tech exercises (started within 12 months of surgery) were more effective than other physical agents, manipulation or no treatment in improving function³⁶ Supervised exercise programmes and home exercise programmes appear to be equally effective.³⁶

(b) Other physical interventions for low back pain

Pengel *et al*³⁷ explored the effectiveness of other conservative interventions in sub-acute low back pain. They concluded that there is some evidence that manipulation is effective at reducing pain and disability, that wearing a corset can help reduce disability and that a combination of TENS and rehabilitation can improve return to work rates.

Two other reviews^{32;43} found no evidence that braces and back belts are effective interventions in terms of reducing the prevalence of back pain,^{32;43} reducing sick leave due to back pain^{32;43} or reducing the severity of low back.^{32;43} There was also no evidence that they were effective at reducing the costs of low back pain.^{32;43}

(c) Occupational interventions

The existing evidence suggests that a rehabilitation programme should incorporate occupational interventions.^{27;47;49} A number of different occupational interventions have been studied in the literature in relation to sub-acute or chronic low back pain – e.g. workplace visits, early return to work or modified work programmes, ergonomic interventions (including workplace and equipment adaptations, adaptation of job tasks, adaptation of working hours).

There is moderate-strong evidence that these facilitate a faster return to work,^{27;47;49} reduce time off work,^{27;49} reduce pain and disability⁴⁷ and decrease the rate of further back injuries.⁴⁷

(d) Educational interventions

Four reviews^{23;32;37;43} covered various educational interventions for workers with low back pain.

Back school type interventions typically include educational and skills acquisition elements, including exercises, which are delivered to groups of patients and often supervised by a physiotherapist or medical specialist. Reviews focusing on this type of intervention^{18;23} have concluded that there is moderate-strong evidence that back schools (particularly those in occupational settings²³ are effective in improving return to work,^{18;23} reducing the duration of sickness absence,¹⁸ decreasing pain and improving function²³ for patients with sub-acute and chronic back pain. Elders *et al*¹⁸ reported an absolute reduction in time lost from work of between 22% and 42%. Compliance during the interventions was fairly good, although there is little data on the sustainability of compliance and effectiveness. In terms of timing, back school type interventions in the *sub-acute* phase (30 days to 12 weeks) appear to be most preferable.¹⁸

In general, the evidence for the effectiveness of simpler forms of education (e.g. advice, group education, one-off lectures) is less conclusive than that for the more comprehensive, back school type interventions.

- Pengel *et al*³⁷ found moderate evidence that advice for individuals with sub-acute low back pain improved return to work rates both in the short-term (3-12 month follow up) and in the longer-term (5 years).
- Maher's review³² concluded there was moderate evidence that group education or lectures on back care were *ineffective* in reducing the prevalence of low back pain, sick leave due to low back pain, and severity of low back pain. There was also some evidence that they were not cost-effective.

- Tveito *et al*⁴³ assessed a range of educational interventions (including pamphlets, one-off training sessions and lectures) but concluded that, overall, there was no evidence that these had any effect on sick leave, pain levels or prevention of new episodes of low back pain. In addition, there was no evidence relating to their cost-effectiveness.

Timing of interventions

In the *acute* phase of low back pain, the recommended advice is to stay active and continue ordinary activities (including work) as normally as possible with clinical treatment to give symptomatic relief.^{6;49} Many workers with acute low back pain may be able to continue working or return to work after only a short period of absence lasting a few days or weeks – even if they still experience some residual symptoms.^{6;49}

Most patients with low back pain recover within four to six weeks⁵² without any intervention. Formal rehabilitation interventions are therefore likely to be most effective in improving return to work rates in the sub-acute and chronic stages of low back pain.

In the *sub-acute* stage, it is recommended that intervention focus should change from purely symptom management to a more 'active rehabilitation programme'^{6;49} to facilitate earlier return to work and prevent chronic disability and long-term sickness absence. Indeed, there is evidence that the longer a person is off work with low back pain the lower their chances are of being able to return to work.⁴⁹ For example, once they have been off work for 4-12 weeks, they have a 10-40% risk of still being off work one year later. For those absent from work for 1-2 years, it is unlikely they will return to work in the near future, even with further treatment.

Thus it has been recommended that workers with low back pain of over 4 week's duration should be offered interventions as soon as possible, rather than delaying action.⁴⁹ However, few of the systematic reviews we identified offered any real conclusions about the optimum timing of interventions for back pain.

Intensity of multidisciplinary interventions

Only one review of 10 RCTs (involving 1964 participants)²¹ addressed the issue of how intensive multidisciplinary biopsychosocial rehabilitation (MBR) programmes should be for *chronic* low back pain (of more than 3 months duration).

In terms of *clinical* outcomes (e.g. restoring function and reducing pain), the review concluded there was evidence that more intensive MBR programmes (e.g. daily attendance with more than 100 hours of therapy) are more effective than less intensive programmes (e.g. once or twice weekly attendance with less than 30 hours of therapy).²¹ There was also strong evidence that intensive MBR improves functioning and moderate evidence that it reduces pain when compared to non-MBR or usual care.²¹ There was no evidence that less intensive MBR improved pain or function compared to non-MBR or usual care.²¹

In terms of *vocational* outcomes, however, there was contradictory evidence for the effectiveness of intensive MBR programmes – one study reported improvements in work readiness but two studies showed no benefit on duration of sickness leave.²¹ There was no evidence that less intensive MBR improved vocational outcomes compared to non-MBR or usual care.²¹

Musculoskeletal problems other than back pain

Table 1.2 (Appendix 1) summarises the eleven papers^{6;19;20;25;26;28;31;33;40;41} which reported on systematic reviews of interventions for musculoskeletal problems (other than back pain).

Summary of the evidence

(a) Many of the systematic reviews examined found limited or inconclusive evidence for the effectiveness of interventions for workers with musculoskeletal problems because of the relatively small number of high quality RCTs in this area.

(b) However, there is general consensus that a **multidisciplinary** approach would be appropriate for common musculoskeletal disorders and that the available evidence broadly supports a **biopsychosocial approach**.

(c) There is some support for proposing that useful components of a multidisciplinary intervention would include:

- **exercise/physical training**
- **psychological** interventions (e.g. behavioural therapy, relaxation);
- **organisational** interventions (e.g. workplace visits, work conditioning, return to work coordinator); and
- **educational** interventions (e.g. stress management training).

(d) There is a **need for further high quality research** on the optimum nature and content of multidisciplinary interventions for musculoskeletal problems, other than back pain.

Multidisciplinary biopsychosocial rehabilitation for musculoskeletal problems

Four reviews^{6;25;26;28} focused on multidisciplinary biopsychosocial rehabilitation (MBR) programmes for musculoskeletal problems *other* than low back pain, including fibromyalgia,²⁵ neck and shoulder pain,²⁸ upper limb repetitive strain injuries.²⁶ Overall, these found little consistent or robust evidence for the effectiveness of MBR for musculoskeletal problems other than back pain when compared to usual care or other treatments. In three of the four reviews,^{25;26;28} few RCTs of good quality were identified.

Nonetheless, the Waddell & Burton (2004) report⁶ concluded that there was a *general consensus* that a multidisciplinary approach was appropriate for common musculoskeletal disorders and that the available evidence was broadly consistent with that for low back pain and supported a biopsychosocial approach.

A review by Meijer *et al*³³ included studies that had recruited patients with either back problems *or* other musculoskeletal problems. This concluded the evidence regarding the effectiveness of multidisciplinary return-to-work programmes was inconsistent. Whilst no studies reported a negative effect, only 7 of 22 studies showed a positive overall effect on return to work, and 12 studies showed no effect on return to work.

Content of multidisciplinary interventions for musculoskeletal problems

The report by Waddell & Burton (2004)⁶ highlighted the need for further high quality research on the optimum nature and content of multidisciplinary interventions for musculoskeletal disorders other than back pain.

Whilst there were no firm conclusions about the effectiveness of MBR programmes for musculoskeletal problems, a number of reviews have suggested what these might incorporate:

- Karjalainen *et al*²⁵ concluded that behavioural treatments, stress management, education and physical training appeared to be useful intervention components for fibromyalgia and widespread musculoskeletal pain.
- Meijer *et al*³³ found that a combination of education, psychological, physical and work conditioning interventions (possibly supplemented by relaxation exercises) appeared to be essential to the success of return to work programmes for musculoskeletal problems.
- In relation to MBR interventions for neck and shoulder pain, Karjalainen *et al*²⁸ found some support for having a psychologist who could act as an adviser to other health professionals in the multidisciplinary team.

Reviews focusing on single component interventions (e.g. exercise, organisation interventions) may also inform the likely content of MBR programmes for musculoskeletal problems. These are summarised below.

(a) Exercise and physical conditioning programmes

Four reviews^{19;40;41;45} looked at the effectiveness of various forms of exercise for the following musculoskeletal problems:

- *Arm, neck or shoulder complaints*: There was limited evidence that exercises are more effective than other conservative treatments (such as massage)⁴⁵ but conflicting evidence about the effectiveness of exercise over no treatment or as an add-on treatment.⁴⁵ No one type of exercise appears to be more effective than any other.⁴⁵ There was, however, limited evidence that individual exercises were more effective than exercises in a group.⁴⁵
- *Shoulder injuries (impingement syndrome or rotator cuff tear)*: There was limited evidence that exercise was more effective than no intervention in terms of restoring function.¹⁹ There was also moderate evidence that exercise combined with manual physical therapy was more effective than exercise alone.¹⁹
- *Knee problems (anterior cruciate ligament injuries)*: None of the studies included in the reviews^{40;41} compared the effectiveness of exercise versus no exercise, and there was insufficient evidence to support the efficacy of any one type of exercise over another. Furthermore, because of the inadequate length of follow-up in the existing research, no conclusions could be drawn about the *long-term* effects of exercise.⁴⁰ There was some evidence that patient factors (e.g. age or gender) and intervention factors (e.g. setting, frequency, intensity, timing of surgery) do not influence the effectiveness of exercise.⁴¹

(b) Other physical interventions

Two reviews looked at the evidence for the use of other physical (conservative) interventions for the following musculoskeletal problems:

- *Arm, neck or shoulder problems*: There was limited evidence for the effectiveness of massage combined with manual therapy and limited evidence for the effectiveness of manual therapy combined with exercise.⁴⁵ However, there was no strong evidence for the effectiveness of any intervention when used alone (e.g. energised splints, massage, manual therapy/chiropractic treatment).⁴⁵
- *Shoulder injuries (impingement syndrome or rotator cuff tear)*: There was limited evidence that oral diclofenac was more effective than analgesic injections in improving function and ability to work after 1 year.¹⁹ There was strong evidence that extra-corporeal shock wave therapy was *not* effective and moderate evidence that ultrasound was *not* an effective treatment for this type of injury.¹⁹

(c) Occupational interventions

Franché *et al*²⁰ concluded there is moderate-strong evidence that workplace-based interventions can reduce the duration of sickness absence due to musculoskeletal problems and other pain-related conditions. There was also moderate evidence that they can reduce the costs associated with absence. However, there was insufficient evidence for the sustainability of these effects in the longer-term (beyond 1 year). There was moderate-strong evidence for the effectiveness of the following types of occupational intervention:²⁰

- work accommodation
- ergonomic workplace visits;
- a return-to-work coordinator;
- contact between the healthcare provider and the workplace;
- early contact with the worker by the workplace.

With regard to the nature and timing of contact between the worker and the workplace, and contact between healthcare providers and the workplace, there was no clear evidence about what best practice might be.²⁰

Two other reviews, focusing on specific musculoskeletal problems, have reached less certain conclusions about the effectiveness of occupational interventions:

- *Arm, neck and shoulder complaints*: There was conflicting evidence about the effectiveness of ergonomic programmes compared to no treatment⁴⁵ and, as yet, no clear demonstration of their benefit for this patient group.
- *Carpal tunnel syndrome*: There was limited evidence for the effectiveness of adding breaks during computer work and for the use of some keyboard designs.⁴⁵
- *Upper extremity disorders*: There was insufficient evidence to determine whether workplace rehabilitation programmes were effective, due to the limited scope and inconsistent quality of existing studies.⁴⁶ However, there was some supporting evidence for the effectiveness of ergonomic modifications, exercise programmes, regular work breaks and providing nurse case managers with training on workplace accommodations.⁴⁶

Mental health problems and stress

Table 1.3 (Appendix 1) summarises the five papers^{6;15;17;34;48} which reported on systematic reviews of interventions for mental health problems and work-related stress. Some reviews used a broad definition of mental health problems – e.g. ‘mental health conditions’,⁶ ‘common mental health problems’,⁴⁸ or ‘psychological ill health’,³⁴ whilst others focused on more specific problems such as severe mental illness¹⁵ or work-related stress.¹⁷

Summary of the evidence

(a) It is widely agreed in principle that mental health rehabilitation should be based on a **biopsychosocial approach**.

(b) There is **no robust evidence on the optimum content** of a multidisciplinary rehabilitation intervention for common mental health problems.

(c) There is strong evidence that **cognitive-behavioural therapy (CBT)** interventions are effective for **common mental health problems** – e.g. depression, anxiety. There is also some evidence that:

- **shorter** CBT programmes (up to 8 weeks) may be more effective than longer ones
- **early** CBT interventions are effective
- CBT is particularly effective for employees with high control roles
- CBT plus a focus on increasing potential for enhanced control is useful for employees with low control roles

(d) There is moderate evidence that **brief therapeutic interventions** (e.g. counselling) are effective for employees experiencing job-related distress – particularly where these focus on *problem identification and solving*, rather than the nature of interpersonal relationships.

(e) There is limited evidence that **exercise** may be effective in reducing clinically-relevant outcomes but no evidence of its effect on work-related outcomes.

(f) There is evidence that **supported employment programmes** for people with severe mental illnesses (such as schizophrenia) are more effective than pre-vocational training programmes in helping clients to secure competitive employment.

(g) **Training and organisational interventions** can be successful in improving psychological health and reducing sickness absence, if they focus on:

- improving decision-making and problem-solving
- increasing support and feedback, and
- improving communication skills.

Multidisciplinary biopsychosocial rehabilitation for mental health problems

Waddell & Burton⁶ noted that most of the literature published before 2004 had referred to rehabilitation in *severe* mental health problems (e.g. schizophrenia, bipolar affective disorder). Their report concluded that, in principle, mental health rehabilitation should be based on a biopsychosocial approach.⁶ However, in practice, whilst existing rehabilitation programmes for clients with mental health problems often incorporated standard health care and occupational elements, they tended to overlook the personal or psychological issues which may also play a key role in sickness absence and act as obstacles to return to work.

A later review by Seymour & Grove⁴⁸ focused on workplace interventions for the more prevalent, mild to moderate mental health problems (e.g. depression, anxiety). This review also concluded that a biopsychosocial approach is useful in understanding how the individual's attitudes, work and social environment (as well as the symptoms of the condition itself) may interact to influence their ability to remain in or return to work.

Likely content of multidisciplinary interventions for mental health problems

Neither of the above reviews^{6;48} was able to draw any strong conclusions about the optimum content of a multidisciplinary intervention. However, evidence relating to single component interventions (e.g. exercise, psychological, organisational or educational interventions) may help to inform the likely content of MBR programmes for mental health problems. These are summarised below.

(a) Exercise and physical conditioning programmes

One review by Michie & Williams³⁴ concluded there was limited evidence that aerobic exercise had a positive impact on *clinically-relevant* outcomes (e.g. reducing anxiety and health complaints) when compared to control groups, but there was no evidence regarding the effects of exercise on *work-related* outcomes.

(b) Psychological interventions

The review by Seymour & Grove⁴⁸ concluded there was strong evidence that cognitive-behavioural therapy (CBT) interventions are effective for workers with common mental health problems, such as depression and anxiety, and that CBT is more effective than other types of intervention, such as relaxation techniques.

There was some evidence that *shorter* CBT programmes (up to 8 weeks duration) were more effective outcome than longer programmes, and limited evidence that *early* interventions (e.g. for workers off sick for as little as two weeks) aimed at increasing activity and coping skills were effective.⁴⁸ A CBT approach was found to be particularly effective for employees with high control roles (e.g. managers) and, for those with low control roles, CBT combined with strategies for increasing the individual's potential for enhanced control was recommended. There was some limited evidence (based on 2 studies) that CBT seemed to be effective outcome whether delivered face-to-face or by computer-based software.⁴⁸

There was also moderate evidence that individual brief therapeutic interventions (e.g. counselling) are effective for employees experiencing job-related distress.⁴⁸ Prescriptive therapy which focused on problem identification and solving were more

effective than exploratory therapy which focused on the nature of interpersonal relationships.

(c) Occupational and educational interventions

Crowther *et al*¹⁵ focused on pre-vocational training and supported employment programmes for patients with severe mental illnesses, such as schizophrenia. Pre-vocational training schemes place emphasis on an extended period of preparation (education and training) before the client seeks competitive employment in the open job market. In contrast, supported employment programmes aim to place clients directly into competitive employment to obtain and learn from real work experience. Under these programmes, clients do not receive lengthy pre-employment preparation, but their individual needs and preferences are taken into account and there is ongoing monitoring and support from 'job coaches' whilst they work. The available evidence¹⁵ suggests that supported employment is more effective than pre-vocational training in terms of the number of clients who secure competitive employment (34% clients in supported employment programmes vs. 12% clients in pre-vocational training schemes at 18 months follow-up). Clients in supported employment also tended to earn more and work for more hours per month than those in pre-vocational training.¹⁵ There was no clear evidence that pre-vocational training was any more effective than standard community mental health care in helping clients to obtain competitive employment.¹⁵ However, much of the evidence on supported employment comes from small-scale studies in hospital settings within the United States of America conducted with highly selected participants; as such, the results may not be relevant to the current United Kingdom health and social care systems.

Michie & Williams' review,³⁴ focusing on the prevention of sickness absence and psychological ill-health, concluded that successful interventions focused on improving decision-making and problem-solving, increasing support and feedback, and improving communication skills. There was limited evidence that educational interventions, such as stress management training and problem-solving skills training, resulted in significant reductions in *clinically-relevant* outcomes (e.g. depression, anxiety, stress hormone levels),³⁴ although there was little evidence regarding the impact of such interventions on *work-related* outcomes. The results of two studies included in the review (whilst omitting to report any statistical tests) suggest that:

- an early referral to occupational health can reduce the duration of sickness leave (from an average of 40 weeks to 25 weeks); *and*
- communication training can be successful in reducing staff resignations and sick leave.

Cardio-respiratory problems

Table 1.4 (Appendix 1) summarises the two papers,^{6,35} which reported on systematic reviews of interventions for cardio-respiratory problems. One review covered both cardiovascular and respiratory problems⁶ while the other review focused only on chronic obstructive pulmonary disease.³⁵

Summary of the evidence

- (a) There is broad consensus that cardiac rehabilitation should be based on a **biopsychosocial model**.
- (b) There is strong evidence that **cardiac rehabilitation** improves clinical outcomes for hospital patients after major cardiac events (e.g. myocardial infarction, coronary artery by-pass grafting). There is consensus that it should:
- begin as soon as possible after hospital admission;
 - extend over the long term.
- (c) There is consensus that cardiac rehabilitation programmes should include a combination of the following elements:
- exercise training;
 - educational counselling;
 - risk factor modification;
 - vocational guidance;
 - psychosocial interventions;
 - relaxation and stress management training.
- (d) There is little robust data on the effect of cardiac rehabilitation on vocational outcomes.
- (e) There is little evidence that rehabilitation interventions are effective for less severe cardiac problems (e.g. hypertension) or for respiratory disorders (e.g. asthma) – although there is some suggestion that exercise training and self-management educational approaches may be useful.
- (f) There is insufficient evidence on the effectiveness of self-management education programmes for chronic obstructive pulmonary disease (COPD).

Multidisciplinary biopsychosocial rehabilitation for cardio-respiratory problems

Waddell & Burton⁶ noted that multidisciplinary rehabilitation was usually provided for hospital patients after *major cardiac* events (e.g. myocardial infarction or coronary artery by-pass grafting). There was strong evidence that such cardiac rehabilitation improved clinical outcomes, although there was little evidence of its effect on employment status or occupational outcomes.⁶

Likely content of interventions for cardio-respiratory problems

The review by Waddell & Burton⁶ concluded that there was “broad consensus” that cardiac rehabilitation should be based on a multidisciplinary, biopsychosocial model, begin as soon as possible after hospital admission and extend over the long term. They suggested that rehabilitation should include exercise training, educational counselling, risk factor modification, vocational guidance, psychosocial interventions, relaxation and stress management training.⁶

Whilst there was no clear evidence about their effectiveness, it was also suggested that exercise training and self-management educational approaches may also be useful components of rehabilitation in *less severe* cardiac problems (e.g. hypertension) and *respiratory disorders* (e.g. asthma, chronic obstructive pulmonary disease).⁶

However, an earlier review by Monninkhof *et al*,³⁵ which focused on chronic obstructive pulmonary disease (COPD), concluded that there was insufficient evidence upon which to make recommendations about the effectiveness of self-management education programmes. Existing studies showed no significant effect on sickness absence, hospital admissions, emergency department visits, or lung function and there was also inconclusive evidence about their effect on quality of life, COPD symptoms and use of community healthcare resources. There was, however, some evidence, that self-management education did reduce the need for rescue medication and increased the use of oral steroids and antibiotics for respiratory symptoms.

Other health problems

Table 1.5 (Appendix 1) summarises the remaining four papers^{16;30;42;46} which reported on systematic reviews of interventions for other health problems – i.e. various workplace injuries,^{30;46} chronic rheumatic diseases¹⁶ and acquired brain injury.⁴²

Summary of the evidence

- (a) There is strong evidence that formal multidisciplinary rehabilitation is beneficial for patients with **moderate to severe brain injury**. There is some evidence that:
- Continued intervention, particularly with more intensive programmes, helps to sustain functional gains made in early post-acute rehabilitation.
 - Specialist multidisciplinary community rehabilitation can provide additional functional gains
- (b) There is strong evidence that patients with **mild brain injury** make a good recovery with provision of appropriate information, without any additional specific intervention.
- (c) There is moderate-strong evidence that modified work programmes help **injured workers** return to work. However, it is not yet clear which components of such programmes are most effective.
- (d) There was some evidence that modified work programmes are also cost-effective for employees with **work-related injuries**.
- (e) There is only limited evidence for the effectiveness of vocational rehabilitation programmes for workers with **chronic rheumatic diseases**, although these are likely to have a positive effect on return to work in the short-term.

Multidisciplinary rehabilitation for other health problems

Only one review focused on multidisciplinary interventions – for acquired brain injury.⁴² This concluded that, for patients with *moderate to severe* brain injury, there was strong evidence of benefit from continued formal intervention and moderate evidence that this (particularly from more intensive programmes) can help to sustain functional gains made in the early post-acute rehabilitation. There was some limited evidence that specialist multidisciplinary community rehabilitation provided additional functional gains.

Likely content of interventions for other health problems

(a) Occupational interventions

Two reviews looked at occupational interventions for workplace injuries³⁰ and chronic rheumatic diseases.¹⁶

There was moderate-strong evidence that modified work programmes facilitated return to work for workers with a range of injuries.³⁰ Employees who were offered such programmes returned to work twice as often as those who were not and the number of lost work days was cut by half. However, it was unclear which components of the modified work programmes were most effective for which types of injuries. There was some evidence that modified work programmes were also cost-effective.

There was only limited evidence for the effectiveness of vocational rehabilitation programmes for workers with chronic rheumatic diseases¹⁶ due to the poor methodological quality of the included studies. However, 5 of the 6 studies did report marked positive effects on successful return to work in the short-term (between 2 and 12 months' follow up).

(b) Educational interventions

One review⁴² found strong evidence that patients with *mild* brain injury make a good recovery with provision of appropriate information, without any additional specific intervention.

Interdisciplinary communication and coordination of interventions

A number of the identified systematic reviews^{6;31;48;49} highlighted the importance of effective communication and active collaboration between health care professionals (e.g. in occupational health and in primary care), the workplace and the individual worker to the success of rehabilitation.

One review³⁷ concluded that there was some evidence (from one high quality RCT) that coordination of primary health care was effective in reducing disability for workers with sub-acute low back pain, but did not report any effects of coordinated care on *vocational* outcomes.

Few of the systematic reviews provide any detailed information on the nature and level of interdisciplinary communication involved in existing interventions or how more complex rehabilitation programmes might best be coordinated.

However, a systematic review of *qualitative* literature on return to work after injury³¹ which also identified the challenge of communication between the differing players (e.g. the worker, employer, healthcare professionals) and coordination in the return to work process does attempt to explore how this challenge might be met. It concludes that health care providers and workplace supervisors in particular have a key role to play in facilitating a successful return to work and need to collaborate effectively to overcome the beliefs and communication barriers that may undermine the complex return to work process. Specifically, the authors argue that an intermediary health professional might facilitate communication by visiting the workplace, gaining a good understanding of the worker's needs and liaising between the physician and the employer. Within the workplace, the worker's supervisor might also assist return to work by maintaining positive relationships between the worker and their colleagues, organising appropriate adjustments to the physical work environment and providing a link between the worker and senior management.³¹

Discussion of results from the literature review

The review of the available literature suggests that a multidisciplinary biopsychosocial approach to rehabilitation is likely to be most appropriate in helping sick-certified individuals return to work. Waddell & Burton⁶ argue that there is strong evidence that this general approach can be effective across a range of common health problems.

There is consensus that interventions should be offered early in the sickness absence period, having taken account of the natural history of the individual disorder, to try to prevent progression to long-term incapacity and the negative consequences of being out of work.^{6,10} However, the evidence relating to back pain suggests that intervening in the acute stages of the condition (i.e. in the first 4-6 weeks) may not be appropriate, as the majority of people with back pain recover within 4-6 weeks without intervention. For back problems, it would appear that intervention in the sub-acute and chronic stages (i.e. for back pain lasting more than 6 weeks) is most likely to be effective in improving return to work rates.

Although there is as yet no definitive evidence concerning the optimum content or intensity of a multidisciplinary rehabilitation intervention, which could be offered to sick-certified workers with a range of health conditions (and perhaps multiple conditions), it is likely that it should be work-focused, tailored to the needs of the individual, and provide access to an appropriate combination of the following components:

- appropriate medical interventions and referrals to address the health condition;
- exercise or physical conditioning programmes to restore the individual's physical functioning;
- psychosocial interventions – e.g. cognitive-behavioural therapy (CBT); problem-focused therapy
- organisational interventions – e.g. workplace visits, ergonomic interventions and work modification;
- educational components – e.g. back school type education, risk factor modification, advice on return to work or alternative employment opportunities

None of the literature directly addresses the optimum skill mix required to deliver effective return-to-work interventions. To provide a holistic service such as that described above, it is likely that the core multidisciplinary team should consist of:

- a physiotherapist
- an occupational therapist
- a psychotherapist or other health professional trained in CBT techniques
- an occupational health professional
- a social worker
- an employment adviser or return-to-work coordinator

There may also be a case for input from a clinical psychologist who can provide advice and/or supervision to the team.

Timely and effective communication as well as active collaboration between health care professionals, the workplace and the individual worker is likely to be important to a successful return to work.

Waddell & Burton⁶ argue that good rehabilitation can reduce sickness absence and the number of people who progress to long-term incapacity and disability. They state there is strong evidence that job retention, return to work and reintegration can all potentially be improved by at least 50% (and in principle by much more) for people with common health problems.

However, there is a need to recognise the limitations of and barriers to rehabilitation. Waddell & Burton⁶ argue that there are many practical problems in designing and delivering a rehabilitation programme in practice. Successful rehabilitation and return to work is a process which depends a great deal on personal motivation and effort on the part of the individual worker,^{6;10} but there are also a number of external barriers, including the attitudes, knowledge and practices of health professionals and employers and gaps in NHS provision, which need to be overcome.¹⁰

Limitations of the literature review

Given the timescale of the project, the literature review has focused on systematic reviews of rehabilitation or return to work interventions in any setting and we identified no systematic reviews of primary care based interventions. Due to time restrictions, we have not addressed this gap in the literature by completing a review of scientific papers reporting on individual randomised controlled trials of interventions in primary care settings. The available evidence therefore relates predominantly to rehabilitation in outpatient or workplace settings.

3: Report on the stakeholder consultation

Summary of results from the stakeholder panel:

Based on findings from general practitioner stakeholder panel, is it possible to highlight appropriate components of, and target groups for, the intervention:

An intervention to facilitate early return to work is appropriate for the following groups of patients:

- ✓ For a wider set of clinical indications for patients with musculoskeletal conditions as compared to mental health or cardio-vascular conditions;
- ✓ Those with mild/ moderate symptoms rather than those with severe symptoms;
- ✓ Those with symptoms lasting one month or longer;
- ✓ Those not already receiving/ awaiting specialist health care or interventions for their medical condition;
- ✓ Those on repeat, recurrent or extended sickness certification rather than those on their first sickness certification;
- ✓ Those without access to an occupational health service;
- ✓ Those who have been on sickness certification for 7 weeks or longer or those certified for 4-6 weeks if they do not have access to an occupational health service.

It is appropriate for an intervention to facilitate early return to work to:

- ✓ Provide a combination of biopsychosocial and vocational support as opposed to just vocational support;
- ✓ Be delivered either by a multidisciplinary team, or a single healthcare professional or specialist;
- ✓ Provide priority access to required health and social care services for those receiving sickness certification over and above the general population in need of such services;
- ✓ Be located in a Department for Work and Pensions facility;
- ✓ Accept referrals from healthcare professionals and self-referrals from patients;
- ✓ Involve direct joint working between the employer and intervention service to implement appropriate work modifications;
- ✓ Provide access to clinical skills such as a physiotherapist; an occupational therapist; a health professional trained in specific psychological techniques (CBT); a clinical psychologist; an occupational health specialist; and non-clinical skills such as a return to work coordinator to assist with vocational issues; and a representative with knowledge of social security issues and benefits system;

Objectives

The primary objective of the stakeholder consultation is to obtain feedback on the development of an intervention model aimed at preventing the transition to long term sickness absence and eligibility to claim incapacity benefit. Consequently the focus is on patients at the Med3/ Med5 stage of sickness absence. Model development entails the identification of appropriate patient groups and a model of care from the perspective of those issuing sickness absence certificates. The scope of the consultation is limited to model development and any model implemented should be piloted and subject to further testing, as discussed in the conclusion of this report.

A secondary objective is to test the viability of a methodology and process which could be used to develop nationally and professionally acceptable guidelines.

Methods

The consultation took place in two parts, firstly as in-depth interviews with five general practitioners and two occupational health specialists and secondly through a web-based survey completed by nine General Practitioners, using a modified version of a formal group judgment method known as the RAND Corporation/ University of California Los Angeles (UCLA) Appropriateness Method (hereafter RAM).¹³

The interviews informed the identification of the key themes of the model and development of the panel survey. Mean interview length was 37 minutes (range 24-53). Interviews were carried out using a structured topic guide, recorded and detailed notes were taken. These detailed notes provided a framework for interpretation of the panel results. Interviews were not subject to a formal qualitative analysis as this was inappropriate for the context in which it was being utilised.

RAM is a well-established and internationally recognised technique which combines a synthesis of the latest available scientific evidence with the collective judgment of a panel of experts. The strength of the method arguably lies in the systematic way in which it combines both professional opinion and evidence.⁵³ RAM panel composition depends on the nature of the treatment or intervention being investigated and on the group that is ordinarily involved in treatment decisions in the context of interest.¹³

Between seven and fifteen panellists is regarded as the optimum number for a RAM panel, although nine member panels have become a common rule of thumb.¹³ This group size is regarded as large enough to permit diversity and small enough to manage group feedback or discussion during the data collection process. Panel sizes of 9-12 members have been found to produce results which are reproducible by second panels.⁵⁴ The panel process has three distinct stages: evidence appraisal and two rounds of a panel survey, between which rounds there is usually a group meeting to discuss areas of inconsistency or disagreement.

The aim of RAM is to generate statements about the appropriateness of medical interventions for patients with specified conditions and characteristics. A range of statements are presented to panellists, representing different clinical scenarios which may confront the professional making treatment decisions. Panellists are asked to rate the appropriateness of providing the treatment in each of these scenarios. RAM and other RAND appropriateness methods have previously been used to test views on the

appropriateness of a range of medical and surgical procedures including hysterectomy,⁵⁵ coronary artery bypass surgery,⁵⁶ and gastrointestinal endoscopy,⁵⁷ and interventions for a variety of conditions including, myocardial infarction,⁵⁸ asthma,⁵⁹ and diabetes.⁶⁰ Appropriateness methods can be used either prospectively, as an aid to clinical decision-making at the level of the individual patient or within guideline development work, or retrospectively using representative samples of medical records to determine the appropriateness of treatments provided to groups of patients. The latter method is generally used to detect over-use or under-use of medical procedures.

The RAM method is used here in the former sense, as a prospective method to inform development work on the potential patient groups and contexts which are deemed appropriate for intervention. The main modification made to the published methodology is that the second round was carried out without a group meeting to discuss the issues prior to reviewing the ratings. Within this scoping project, this modification has allowed the testing of a more cost and time effective methodology which can be used to engage a panel where members may be geographically diverse, using available technologies. This method can subsequently be used as a means of developing guidelines to inform the care of patients on sickness absence.

Since the project aim was to develop a model from the perspective of those issuing sickness absence certificates, the panel was entirely comprised of general practitioners, the key group issuing certificates in the United Kingdom.⁴ Furthermore, since the objective was to develop a model suitable for delivery in a primary care setting, it was considered important to obtain feedback from those likely to be delivering or referring patients to such a service.

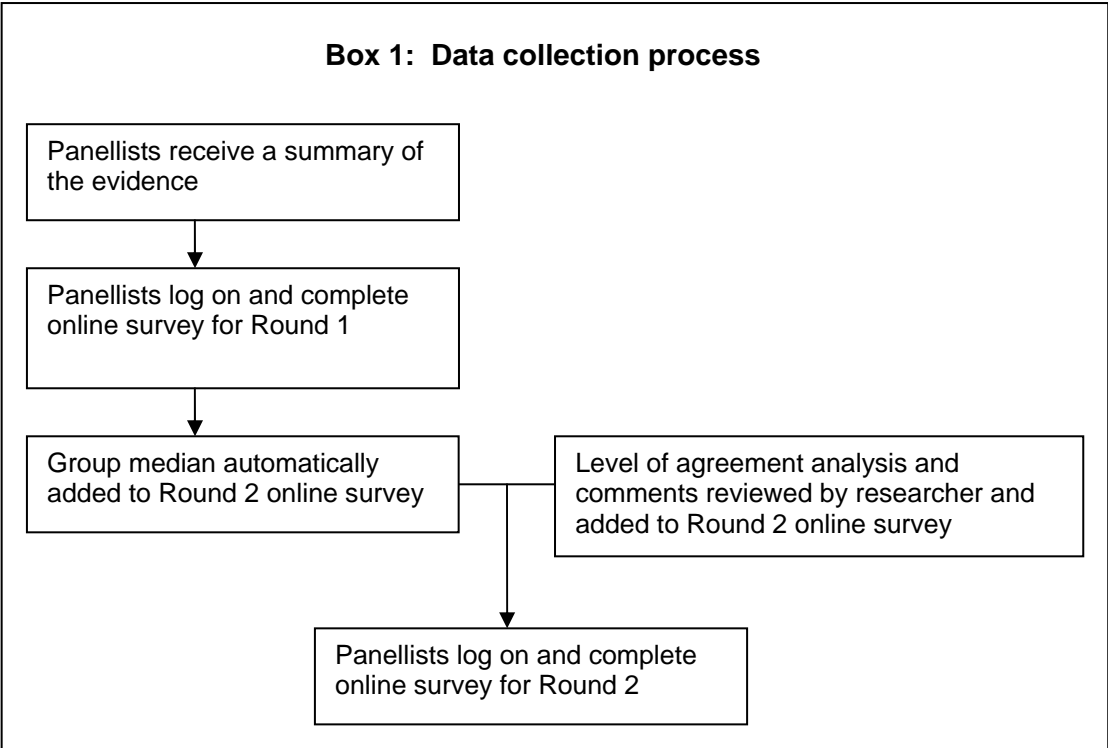
Sampling, procedure and survey design

Nine panellists, six male and three female, took part in the RAM survey which was conducted in two rounds over a five week period between late October and early December 2007. All panellists were currently practicing general practitioners from within Devon, representing eight different practices. This sample represents a local group within a mixed urban and rural setting. Sampling was achieved by compiling a list of sixteen local general practices known to the research department and selecting two general practitioners from each practice. Thirty two letters were sent out and follow-up telephone calls secured the participation of twelve general practitioners initially, although three were subsequently unable to participate in the study. All nine panellists took part in both rounds of the survey which was conducted using an online form accessed using unique usernames and passwords (see Appendix 3 for samples of the online form). Each round was estimated to take 25 minutes to complete.

Prior to participating in round one of the survey, panellists were sent a synthesis of the evidence from the systematic literature review, e-mailed as a Portable Document File (PDF) (see Appendix 4), and asked to consider this information and combine it with their own clinical judgment when responding to the survey.

In round one, panellists were asked to complete an online form containing a series of statements regarding the appropriateness and necessity of different components of the potential service model. Space was provided for additional comments. All panellists were provided with definitions of the terms used in the list of statements.

In round two, each panellist received the online form again, this time containing a reminder of their own individual ratings from round one, an indication of the panel’s median ranking for each statement, and a summary of additional comments made by panellists in round one. Statements for which there was disagreement amongst the panel were highlighted. Panellists were asked to review their own ratings from round 1 in light of the new information presented, and revise these if desired, although it was make clear that panellists could also leave answers unchanged if they wished. They had the opportunity to change any of their ratings but were asked to pay special attention to the areas of disagreement highlighted. There was no attempt to force the panel to consensus.



A total of 91 statements were included in the online survey which panellists were asked to rank on a scale of 1 to 9, to indicate the appropriateness or necessity of different components of the intervention (see Appendix 5 for a diagram of the structure of the panel survey). The components listed were based on indications from the research literature of appropriate approaches to preventing sickness absence and were also informed by the preliminary stakeholder interviews with practicing general practitioners and occupational health specialists.

The service model was divided into three components, namely, the patient group at which the intervention should be targeted (Section A of the panel survey), the appropriate components of the intervention (Section B) and the optimum skills mix for delivering the service (Section C). Sections A and B were assessed using the appropriateness scale (Box 2), whilst a necessity rating was used for section C of the survey (Box 3). Definitions and scales for the conceptually distinct scales appropriateness and necessity are provided in Boxes 2 and 3.

Box 2: Appropriateness rating scale

*Rating scale for judging the **appropriateness** of the components of the intervention*

1	Definitely inappropriate
2-3	Inappropriate
4-6	Uncertainty/ doubt
7-8	Appropriate
9	Definitely appropriate

An “appropriate” return to work intervention was defined to panellists as one in which:

- the expected incremental health and social benefits exceed the expected negative consequences by a sufficiently wide margin for a specific indication;
- the procedure is generally considered acceptable care and a reasonable approach to patient management.

Box 3: Necessity rating scale

*Rating scale for judging the **necessity** of the components of the intervention (Section C)*

1	No relevance to sickness absence
2-3	Not routinely required
4-6	May be useful but not a necessity
7-8	Must be available
9	Absolute necessity for all patients

Panellists were advised that “necessity” implies that:

- the expected benefit of this resource outweighs the expected harms or resource implications by such a margin that the resource must be included.

Data analysis

The data presented are based on round two ratings only. For each statement, the median panel rating as well as the frequency, range and distribution of ratings are calculated. Median panel scores are further categorised into three levels (see Box 4) following an assessment of the level agreement between panel members. Disagreement occurs where 3 or more panellists fall into the 1 to 3 category and three or more fall into the 7 to 9 category. This implies polarization of responses and so indicates disagreement. Although a variety of definitions of disagreement have been devised, the cut-off used here of at least three responses in each of the highest and lowest tertiles is the classic definition of disagreement for a nine member panel in RAM studies.¹³ As noted by Fitch *et al.* (2001), definitions of agreement have been developed but are rarely used in practice since the appropriateness classification depends only on the median ranking and the presence or absence of disagreement.¹³

An appropriate/ necessary score is one where the panel median falls into the highest score category (7 to 9) without disagreement amongst panellists. This indicates

consensus that this component is either appropriate or necessary, depending on the scale used. Panel medians of 1 to 3 without disagreement are deemed to be inappropriate/ unnecessary. Scores ranging from 4-6 (without disagreement) indicate uncertainty. Any median with disagreement is classified as uncertain.

Box 4: Categorisation of median scores

1-3 (without disagreement) = Inappropriate/ Unnecessary
4-6 (without disagreement) = Uncertain
7-9 (without disagreement) = Appropriate/ Necessary
Any median with disagreement = Uncertain

The RAM method makes use of statements with similar stems but varying endings and each statement contains a number of variables of interest. Consequently, in order to make some assessment of the relative importance of different variables it is fruitful to group statements according to these variables and make comparisons between the groups. This technique is employed as additional analysis for section A of the survey. This is done by comparing the number of appropriate, uncertain and inappropriate ratings for all statements relating to each variable of interest.

Key themes and summary data tables are presented in the results section while a full list of appropriateness ratings and calculations for all 91 statements is presented in Appendix 2 (tables 2.1-2.8).

Results

Section A: The identifying factors/ characteristics of the patient group suitable for targeting an intervention to help their early return to work

For each of the three most prevalent conditions affecting those receiving (Med 3/5) sickness certification (i.e. mental health problems, musculoskeletal conditions and cardio-respiratory illness), panellists were asked to consider the appropriateness of referring patients to an intervention programme to help their early return to work. They were asked to take into consideration a range of factors that we judged could potentially affect the appropriateness of referring a patient to the intervention, including:

- symptom severity (mild/moderate vs severe);
- symptom duration (greater than or less than one month);
- the presence or absence of specialist health services (yes/no);
- the number of certifications (first vs repeat).

The findings on each of these variables are outlined below and are considered in more detail in the discussion at the end of this section, with full data presented in Appendix 2 tables 2.1-2.3.

Panellists were also asked to consider the appropriateness of referring patients to an intervention to help their early return to work depending on:

- the patient's access to an occupational health service (yes/no),

- the patient's level of job satisfaction (low vs moderate/high),
- the patient's length of time on sickness certification (1-3, 4-6, 7-12 or 13+ weeks).

The latter set of considerations related to all patients receiving sickness certification (Med 3/Med 5) for any cause rather than for patients with different conditions. The corresponding detailed data for these items is in Appendix 2, table 2.4.

Box 5: Summary – Section A

There is agreement that a return to work intervention is appropriate for patients with no access to occupational health services in receipt of sickness certification for at least 4 weeks and for those with access to occupational health services in receipt of sickness certification for at least 7 weeks. Job satisfaction is not an influential factor for decisions on appropriateness.

Regardless of severity, the intervention is judged appropriate for patients with mental health or cardio-respiratory conditions with symptoms lasting over 1 month and not receiving or not awaiting specialist health services. The exception is for patients on repeat, recurrent or extended certification with severe mental health conditions or those on their first certification with severe cardio-respiratory conditions, in which cases it is not considered appropriate.

Patients with musculoskeletal conditions not receiving/ awaiting specialist health services are considered appropriate referrals to a return to work intervention even if they have symptoms of less than one month with the exception of patients on first certification with severe symptoms. It is also considered appropriate for patients with severe musculoskeletal conditions receiving or awaiting specialist health services with symptoms lasting more than 1 month.

There is agreement that a return to work intervention is inappropriate for patients experiencing symptoms of less than one month and are on first certification if they have mild-moderate mental health or cardio-respiratory conditions or severe musculoskeletal conditions and are awaiting or receiving specialist health care services. Similarly, intervention for patients with symptoms of less than one month is judged inappropriate for patients with cardio-respiratory conditions or severe mental health conditions regardless of input from specialist health services and regardless of first or repeat certification for the latter group.

Patient morbidity

As shown in table 1, of the three conditions most commonly affecting people on sickness certification, panellists reported that a return to work intervention was appropriate for a wider set of clinical indications for those with musculoskeletal conditions as compared to other conditions. There were fewer indications judged

appropriate for those with cardio-respiratory and mental health conditions, although this was mostly due to greater uncertainty as opposed to a classification of inappropriateness. There were some instances in which panellists felt it would be appropriate to refer patients with any of the three prevalent conditions, although this was dependent on issues such as symptom duration and the presence or absence of specialist health input, as discussed further below.

- ✓ Intervention most appropriate for those with musculoskeletal conditions, although also appropriate for some categories of patients with cardio-respiratory and mental health conditions, depending on issues such as duration of symptoms and the presence or absence of specialist health services.

Table 1: Comparison of intervention appropriateness across main conditions causing sickness absence

Condition	No. of scenarios where intervention is deemed <i>appropriate</i>	No. of scenarios where intervention is deemed <i>uncertain</i>	No. of scenarios where intervention is deemed <i>inappropriate</i>	Total number of scenarios provided
Mental health	4	8	4	16
Musculoskeletal	8	7	1	16
Cardio-respiratory	3	10	3	16

Symptom Severity

Overall, the intervention was regarded as more appropriate for those with mild/moderate symptoms than for those with severe symptoms (see table 2 section iv a), with 9 scenarios for patients with mild/moderate symptoms rated as appropriate as compared to 6 for those with severe symptoms.

However, this factor was considered most significant for patients with mental health conditions, with 3 of the 4 groups of patients with mental health conditions that were judged appropriate in the mild-moderate category and only 1 in the severe category (table 2.1 section i a). The single group of patients with severe mental health conditions which were judged as appropriate referrals for the proposed intervention were those on their first certification with symptoms lasting more than one month and who were not in receipt of specialist health services.

- ✓ Return to work interventions more appropriate for those with mild-moderate symptoms than those with severe symptoms, with particular reference to mental health conditions

Symptom Duration

Panellists regarded the intervention to be most suited to patients with longer symptom duration, that is, those with symptoms lasting a month or over (table 2 section iv b). Eleven groups of patients with symptoms lasting a month or over were judged as appropriate as compared to only 4 groups of patients with symptoms of less than 1 month. In relation to inappropriateness ratings, the intervention was never judged inappropriate for patients with symptoms greater than 1 month, as compared to 8

scenarios for which it was judged inappropriate for patients with symptoms of less than one month.

Where symptoms had been present for less than one month for patients with a cardio-respiratory condition, an intervention was classified as either inappropriate or there was uncertainty across the panel. For those with a mental health condition, it would be appropriate to refer a patient with symptoms of less than one month if they were on repeat, recurrent or extended certification and were *not* receiving or awaiting any specialist health, but only for those with mild/ moderate rather than severe symptoms. It was also appropriate for patients with musculoskeletal conditions and symptoms of less than one month regardless of symptom severity, although only if not in receipt of specialist health services.

- ✓ Intervention best targeted at those with symptoms lasting a month or longer, although some patients with shorter duration symptoms may benefit if not already receiving or awaiting specialist health services.

Specialist Health Services

For all three conditions, the intervention programme is thought to be more suited to those patients not receiving or awaiting specialist health services (involvement of other healthcare professionals, e.g. through post-operative care in the hospital or outpatients, community mental health, physiotherapy) than to those who are receiving specialist health services (table 2 section iv c). There were 14 clinical scenarios in which the intervention was considered appropriate for those without specialist health services as compared to only 1 for those with specialist health services. Panellists reported that the programme was more appropriate for those without specialist health services regardless of symptom severity, duration and length of time on sickness certification. The only group for which the presence or absence of specialist health services was not considered relevant was for those with cardio-respiratory conditions with symptoms of less than a month.

- ✓ A return to work intervention is thought to be more appropriate for those patients who are not already receiving or awaiting specialist health services.

Number of Certifications

Overall, a return to work intervention was considered more relevant for those on repeat, recurrent or extended sickness certification than those on their first sickness certification (table 2 section iv d). There were 6 scenarios in which it would be appropriate to refer someone on their first sickness certification as compared to 9 for those on repeat, recurrent or extended sickness certification. There were 7 scenarios in which it was judged inappropriate for those on their first sickness certification to be referred to such an intervention as compared to only 1 for those on repeat, recurrent or extended sickness certification.

- ✓ A return to work intervention is judged more appropriate for those on repeat, recurrent or extended sickness certification than those on their first sickness certification.

Table 2: Comparison of appropriateness of intervention in different scenarios for core conditions causing sickness absence

		No. of scenarios where intervention deemed <i>appropriate</i>	No. of scenarios where intervention deemed <i>uncertain</i>	No. of scenarios where intervention deemed <i>inappropriate</i>	Total number of scenarios provided
(i) Mental Health conditions					
a) Symptom Severity	Mild-Moderate	3	4	1	8
	Severe	1	4	3	8
b) Symptom Duration	< 1 month	1	3	4	8
	> 1 month	3	5	0	8
c) Specialist Health Services	Awaiting/ Receiving	0	5	3	8
	Not Awaiting/ Receiving	4	3	1	8
d) Number of Certifications	First Certification	2	3	3	8
	Repeat/ Recurrent/ Extended Certification	2	5	1	8
(ii) Musculoskeletal conditions					
a) Symptom Severity	Mild-Moderate	4	4	0	8
	Severe	4	3	1	8
b) Symptom Duration	< 1 month	3	4	1	8
	> 1 month	5	3	0	8
c) Specialist Health Services	Awaiting/ Receiving	1	6	1	8
	Not Awaiting/ Receiving	7	1	0	8
d) Number of Certifications	First Certification	3	4	1	8
	Repeat/ Recurrent/ Extended Certification	5	3	0	8
(iii) Cardio-respiratory conditions					
a) Symptom Severity	Mild-Moderate	2	5	1	8
	Severe	1	5	2	8
b) Symptom Duration	< 1 month	0	5	3	8
	> 1 month	3	5	0	8
c) Specialist Health Services	Awaiting/ Receiving	0	6	2	8
	Not Awaiting/ Receiving	3	4	1	8
d) Number of Certifications	First Certification	1	4	3	8
	Repeat/ Recurrent/ Extended Certification	2	6	0	8
(iv) Total across all conditions					
a) Symptom Severity	Mild-Moderate	9	13	2	24
	Severe	6	12	6	24
b) Symptom Duration	< 1 month	4	12	8	24
	> 1 month	11	13	0	24
c) Specialist Health Services	Awaiting/ Receiving	1	17	6	24
	Not Awaiting/ Receiving	14	8	2	24
d) Number of Certifications	First Certification	6	11	7	24
	Repeat/ Recurrent/ Extended Certification	9	14	1	24

Access to Occupational Health Service

Overall, it was felt that those with no access to an occupational health service would be a more appropriate target group for the return to work intervention than those with access to such a service, although the difference was marginal. As shown in table 3, there were 6 scenarios in which it was judged appropriate to refer a patient without access to an occupational health service as compared to 4 scenarios for those without. However, referral to the intervention was judged suitable for those with access to an occupational health service if they had been in receipt of sickness certification for 7 weeks or more.

- ✓ Intervention marginally more appropriate for those with no access to an occupational health service

Job satisfaction

The number of statements rated appropriate was equal for those with low and those with moderate-high job satisfaction (table 3, section i). Consequently, job satisfaction does not appear to be an important factor when considering the appropriateness of a return to work intervention.

Length of Time on Sickness Certification

Panellists rated it as appropriate to refer patients who had been in receipt of sickness certification for 7 weeks or longer regardless of their job satisfaction and level of access to an occupational health service (table 3 and Appendix 2 table 2.4). There was a considerable amount of uncertainty as to whether it was appropriate to refer people who had been in receipt of sickness certification for less than 4 weeks, and some uncertainty as to whether to refer people who had been in receipt of sickness certification for 4-6 weeks, although it was felt it would be appropriate for those in the 4-6 week range if they had no access to an occupational health service (Appendix 2 table 2.4). It was felt to be inappropriate to refer people in weeks 1-3 where they had access to an occupational health service and a moderate-high level of job satisfaction.

- ✓ Intervention more appropriate for those who have been on sickness certification for longest

Table 3: Effect of Job Satisfaction, Access to Occupational Health Service and Length of Sickness Certification on appropriateness of intervention

		No. of scenarios where intervention deemed <i>appropriate</i>	No. of scenarios where intervention deemed <i>uncertain</i>	No. of scenarios where intervention deemed <i>inappropriate</i>	Total number of scenarios provided
(i) Access to Occupational Health Service	Yes	4	3	1	8
	No	6	2	0	8
(ii) Job Satisfaction	Low	5	3	0	8
	Moderate – High	5	2	1	8
(iii) Length of time on Sickness Certification	1-3 weeks	0	7	1	8
	4-6 weeks	2	6	0	8
	7-12 weeks	4	4	0	8
	13 or more weeks	4	4	0	8

Section B: Intervention components and location

The second phase of this research investigated panellists' views on the appropriate components of the intervention. Panellists were asked to consider the following:

- Team structure and components (multidisciplinary team; single healthcare professional; biopsychosocial and vocational support; biopsychosocial support only);
- Appropriateness of service providing priority access to health/ social care services for patients receiving sickness certification over and above other patients generally in need of such services;
- Location of the service (primary healthcare team vs DWP facility);
- Appropriate sources of referral (NHS Doctors; Registered healthcare professionals in/outside the NHS; employers; patients);
- Appropriate relationship between the service and employer organisations (working together directly/ working together directly indirectly through patient/ working independently of one another).

Box 6: Summary – Section B

There is agreement that the service model should include:

1. Biopsychosocial and vocational support either delivered by a multidisciplinary team or single healthcare professional;
2. Priority access to required health and social care services for those receiving sickness certification over and above the general population in need of such services;
3. Location in a Department for Work and Pensions facility;
4. Referrals from any registered healthcare professional within or outside the NHS or from the patient;
5. Direct working with the employer organisation to implement appropriate work modifications.

Additional findings include:

1. Disagreement on attaching services/team to GP surgeries
2. Uncertainty on whether it is appropriate for the employer organisation to refer the patient to the service
3. It was regarded as inappropriate for the service to be completely independent from the employer organisation in terms of implementing modifications in the workplace for the patient.

Team Structure and Components

It was of interest whether panellists would prefer the intervention to be delivered by a single healthcare professional or a multidisciplinary team, and secondly, what combination of bio-psychosocial and vocational support was regarded as appropriate.

Biopsychosocial support was defined as including elements which aim to increase activity level and restore function (biological), change behaviour, shift perceptions, attitudes and beliefs in personal and work life (psychological), and support with involvement of employer where possible (social). Vocational support was defined as including a comprehensive understanding of work environment and functional requirements, undertaking work assessments and recommending modifications, graduated return or workstation interventions.

Comparing groups in respect of reports of appropriate team structure and the components of an intervention, it can be seen that the contribution of a multidisciplinary team was marginally favoured over that of a single healthcare professional (although both were seen as appropriate), and that such contributions should include biopsychosocial and vocational support rather than just vocational support alone (Table 4).

- ✓ Programme should combine bio-psychosocial and vocational support
- ✓ Programme should be delivered by a multidisciplinary team or a single healthcare professional

Table 4: Appropriate team structure and components of support

Structure of team and components of support	Median/ Dispersion of responses			Range
Multidisciplinary team, biopsychosocial & vocational support	9			5-9
	1-3	4-6	7-9	
	0	1	8	
Multidisciplinary team, vocational support only	5			3-8
	1-3	4-6	7-9	
	1	7	1	
Single healthcare professional/ specialist, biopsychosocial & vocational support	7			5-8
	1-3	4-6	7-9	
	0	4	5	
Single healthcare professional/ specialist, vocational support only	5			2-7
	1-3	4-6	7-9	
	1	7	1	

Prioritisation of Access to Additional Health or Social Care Services

General practitioners were next asked if they felt it was appropriate for the return to work intervention to prioritise access to health or social care services (e.g. counselling or physiotherapy) for patients on sickness certification requiring such services over and above the general patient population in need of these services. This was asked with respect to the three groups of patients listed below. For all groups, panellists felt such prioritisation would be appropriate (table 5).

- ✓ Prioritize access to health and social care services, where needed, for patients on sickness certification over and above the general patient population in need of such services.

Table 5: Appropriateness of prioritising access to required health and social care services for patients on sickness certification

Category of patients on sickness certification (Med 3/ Med 5)	Median/ Dispersion of responses			Range
Those of working age (irrespective of employment status)	8			6-9
	1-3	4-6	7-9	
	0	3	6	
Those in active paid employment	8			5-9
	1-3	4-6	7-9	
	0	1	8	
Those at risk of losing their employment	9			8-9
	1-3	4-6	7-9	
	0	0	9	

Location of the Service

With regards to an appropriate location for the early intervention service, there was consensus that it would be appropriate to locate the service within a Department for Work and Pensions facility (median 7, range 3-9), as shown in table 6. There was, however, some disagreement over whether it would be appropriate to locate the service

within a primary healthcare team (with 3 or more of the panellists indicating extreme views).

- ✓ Appropriate to locate early intervention service in a Department for Work and Pensions Facility

Table 6: Appropriate location of the service

Location of service	Median/ Dispersion of responses			Range
Department for Work and Pensions facility	7 (appropriate)			3-9
	1-3	4-6	7-9	
	2	2	5	
Primary healthcare team+	7 (uncertain)			1-9
	1-3	4-6	7-9	
	3	1	5	

+ Locating the service in a primary healthcare team was classified as uncertain because the distribution of responses met the RAM definition of disagreement of 3 or more responses in the 1-3 category and 3 or more responses in the 6-9 category

Appropriate Sources of Referral

In relation to the appropriate sources of referral to the intervention service (table 7), panellists were in agreement that it would be appropriate for referrals to be sent by NHS doctors or other registered healthcare professionals either from outside or within the NHS. However, they were uncertain as to whether employer organisations should be able to refer patients. Self-referral by the patient was considered appropriate.

- ✓ Receive referrals from an NHS Doctor, other registered healthcare professional within or outside the NHS, or self-referral from patient.

Table 7: Appropriate sources of referral to the service

Appropriate referrers	Median/ Dispersion of responses			Range
A doctor within the NHS	9			8-9
	1-3	4-6	7-9	
	0	0	9	
Any registered healthcare professional within the NHS	8			7-9
	1-3	4-6	7-9	
	0	0	9	
Any registered healthcare professional outside the NHS	8			4-9
	1-3	4-6	7-9	
	0	3	6	
The employer organisation	6			3-9
	1-3	4-6	7-9	
	1	4	4	
Self-referral from the patient	9			3-9
	1-3	4-6	7-9	
	1	1	7	

Relationship between early intervention service and employer organisations

Panellists were asked the extent to which the early intervention service and employer should work together to implement appropriate work modifications (see table 8). Panellists were in agreement that it was appropriate for these two bodies to work together directly and that it was inappropriate for the two bodies to be working completely independently of each other.

- ✓ Early intervention service and employer should work together directly to implement appropriate work modifications.

Table 8: Appropriate working relationship between intervention service and employer

Appropriate working relationship	Median/ Dispersion of responses			Range
Work together directly to implement appropriate work modifications	9			7-9
	1-3	4-6	7-9	
	0	0	9	
Work together indirectly through the patient to implement appropriate work modifications	4			1-9
	1-3	4-6	7-9	
	3	4	2	
Be completely independent of each other	2			11-8
	1-3	4-6	7-9	
	8	0	1	

Section C: The optimum skills mix for delivering this service

In the final section panellists were asked which professionals it would be necessary to involve in the service, with a list of ten professionals provided (see table 9).

Box 7: Summary – Section C

There is support for the service to facilitate access to multi-professional input. Access to mainstream clinical skills such as physiotherapy, occupational therapy, and clinical psychology is seen as necessary. Also viewed as necessary is access to a healthcare professional specialising in occupational health and specific psychological techniques. Access to non-clinical staff such as a representative with knowledge of the social security and benefits system and a return to work coordinator is seen as necessary. There is uncertainty over the role of a community psychiatric nurse or social worker within the intervention programme.

Provide access to:

- ✓ Physiotherapist;
- ✓ Occupational therapist;
- ✓ Clinical psychologist;
- ✓ Healthcare professional specialising in occupational health;
- ✓ Health professional trained in specific psychological techniques (e.g. CBT) ;
- ✓ Return to work coordinator (to assist with vocational issues);
- ✓ Representative with knowledge of social security issues and benefits system.

Table 9: Necessary skills mix for delivering return to work intervention⁺

Necessary skills mix	Median/ <i>Dispersion of responses</i>			Range
	1-3	4-6	7-9	
Healthcare professional specialising in occupational health	8			5-9
	1-3	4-6	7-9	
	0	1	8	
Community psychiatric nurse	6			4-9
	1-3	4-6	7-9	
	0	5	4	
Physiotherapist	8			7-9
	1-3	4-6	7-9	
	0	0	9	
Occupational therapist	7			5-9
	1-3	4-6	7-9	
	0	4	5	
Return to work coordinator (to assist with vocational issues)	7			5-9
	1-3	4-6	7-9	
	0	2	7	
Clinical psychologist	7			6-9
	1-3	4-6	7-9	
	0	4	5	
Health professional trained in specific psychological techniques (e.g. CBT)	7			6-9
	1-3	4-6	7-9	
	0	2	7	
Representative with knowledge of social security issues and benefits system	7			1-9
	1-3	4-6	7-9	
	1	3	5	
Pharmacist ⁺⁺	3			1-6
	1-3	4-6	7-9	
	7	2	0	
Social worker	5			2-7
	1-3	4-6	7-9	
	2	4	3	

⁺ The rating scale used for this part of the survey investigated necessity rather than appropriateness.

⁺⁺ The pharmacist option was provided to test whether there was a tendency to rank statements positively regardless of content. The inappropriate rating for pharmacist suggests this was not the case.

Discussion of results from the stakeholder consultation

Some clear messages have emerged from the stakeholder panel relating to the development of a potential return to work intervention, in terms of the patient group at which the intervention should be targeted, the timing and appropriate components of the intervention and the optimum skills mix for delivering the service. The preliminary interviews conducted with general practitioners and occupational health professionals provide some useful background information for interpreting these results. As discussed above, the interviews were not subject to a formal qualitative analysis. Nevertheless, the interview data provide some indication of the rationale underlying the appropriateness ratings made by panellists.

Appropriate target group and timing of the intervention

With regards to the timing of the intervention and the range of patients judged suitable for referral, the appropriateness ratings indicated intervention was generally not considered appropriate for patients within their first four weeks of sickness absence or following receipt of their first sickness certificate. Similarly those with symptoms of less than one month duration were not thought to be appropriate referrals. General practitioner panellists interviewed commented that the assumption had to be made that most people absent from work due to illness wanted to get back to work, and that a one-off episode of sickness was not of sufficient concern to warrant referral to the intervention programme. In such situations general practitioners stated that it could be counter-productive to send patients back to work before they were well enough to return. Patients with conditions such as chest infections, bronchitis and pneumonia were highlighted as individuals where there would be support for extending a period of sickness leave where requested to facilitate a full recovery.

The programme was thought to be more suited to those with recurrent patterns of sickness absence. Some general practitioners stated that recurring absence from work may indicate an underlying problem which a return to work programme could address. Occupational health professionals concurred, suggesting that employers were primarily concerned with those with patterns of repeat absence from work. In view of these findings, it seems inappropriate for referrals to be made on patients' first episode of sickness absence.

The length of time for a return to work intervention programme, according to general practitioners, would depend on symptom severity and the nature of a person's work activities. General practitioners also highlighted that patients respond differently to illness and that recovery times and work readiness vary. The implication is that some flexibility with regards to the length of the intervention programme would be appropriate.

General practitioner panellists regarded the intervention programme as suitable for those without access to an occupational health service. Interviewees suggested that it is currently very difficult to get appropriate support for such patients. For patients not in employment, young patients who have never been in employment and the self-employed (who usually lack occupational health support), it was thought the programme could potentially fill an important gap.

The service was judged by panellists to be most appropriate for those with musculoskeletal conditions. The higher perceived suitability of the intervention programme for these patients is perhaps explained by the fact that musculoskeletal conditions are seen as more easily rectified with workplace modifications and early intervention than other health problems. General practitioners and occupational health professionals interviewed emphasised the view that early intervention was key for those with lower back pain, and one general practitioner commented that all his patients with lower back pain requesting sickness certification were routinely sent to the physiotherapist attached to the clinic for a second opinion. Panellists and interviewees suggested that for certain illnesses, such as severe mental health problems, it was unsafe to suggest a return to work. Some interviewees stressed that a return to work intervention would be unsuitable for those with terminal illness. Similarly, key medical interventions such as hernia repair and hysterectomies required a standard and accepted recovery time and were therefore less amenable to early intervention. Returning to work was also regarded as heavily dependent on the nature of a person's

job and the scope for devising a supported and tailored transition back into the workplace following sickness certification.

Appropriate components of the intervention and optimum skills mix

The panel regarded a multidisciplinary team providing a combination of biopsychosocial and vocational support as the optimum model for the service. With regards to the support of other professionals, most general practitioners commented on their desire for reassurance and the support of another professional when making decisions about extending a patient's sickness certificate. Joint decision-making between the general practitioner and an appropriate health specialist such as a psychiatrist or a hospital based team such as a pain clinic was in the patient's interests.

One general practitioner mentioned the potentially valuable role of disability and resettlement officers, a previously available service which was perceived as having been withdrawn. An additional gap in the current system raised by interviewees was the role of employment or careers advice. Directed advice on obtaining employment was suggested and this was thought to be particularly relevant for young people.

Panellists were uncertain as to the role of social workers or Community Psychiatric Nurses (CPNs). Whilst social work input was identified as important by some, others held the view that patients may be reluctant to utilise social services. One of the perceived benefits of social workers was their ability to signpost benefits advice. However, some interviewees commented on the important benefits advice role of Citizens Advice Bureaux, suggesting this may be an appropriate agency to include in a return to work intervention. With regards to CPNs, general practitioners stated that this would be appropriate for some but not all patients, and for this reason were unsure as to whether CPNs should be included within a core team. This is further explained by the panellists' assessments that a return to work intervention is less appropriate for those with severe mental health problems, with CPNs generally only required by such individuals. There may however be a case for community mental health teams being able to refer suitable patients to the intervention programme.

Panellists reported that it was appropriate for the intervention programme to provide priority access to health and social care services, where needed, for those receiving sickness certification over and above the general patient population in need of such services. This was linked to a wider systemic issue of NHS resources and waiting lists. General practitioners interviewed reported that blockages on access to such services restricted their ability to rehabilitate patients and get them back to work. They reported that a greater ability to gain immediate access to specialist services such as physiotherapy, cognitive behavioural therapy and occupational health would reduce patients' prolonged absence from work. Interviewees singled out mental health services and community drug and alcohol services as particularly hard to access, except for those with the most severe conditions.

General practitioners did not express a clear preference about whether these specialist services should be provided in addition to existing services as part of the return to work intervention or whether it was appropriate to prioritise patients on the return to work intervention to existing NHS and social care services. However, there was a clear message that long waiting lists currently made early intervention problematic for those on sickness certificates.

Interviewees stated that the intervention programme overall would supplement, rather than duplicate already existing services since there was little specific help currently targeted at helping patients return to work. With one or two exceptions, general practitioners were unaware of any particular vocational rehabilitation services available locally, although occupational health professionals were aware of local specialist services, such as a local programme to support people with mental health problems into work.

The panel ratings highlighted uncertainty as to the appropriateness of employers making referrals to the return to work intervention. Some general practitioner interviewees held the view that employers were entitled to make referrals since the sickness absence adversely affected the individual's productivity. However, the issue of employers pressurising employees to go back to work was also raised by some general practitioners, particularly in cases of stress, but there was a recognition that employers were in a difficult situation. While some patients complained to general practitioners of unfair pressure from employers, others on long term sickness absence felt their employers had given up on them, and did not provide adequate support to help them return to work. General practitioners felt that in some cases employers may prefer not to continue employing the individuals and therefore do not actively support them.

The panel regarded it as appropriate to locate the service within a Department for Work and Pensions facility and were uncertain as to whether a Primary Care setting was suitable. This was an unanticipated finding and deserves further investigation. A key issue raised in the interviews, and supported by existing qualitative research,⁶¹ is that this preference is due to the desire of general practitioners to avoid compromising the patient-doctor relationship. There is evidence that general practitioners see their role in the sickness certification system as problematic in this respect. However, it is also worth noting that when interviewees in the present study were asked whether it would be appropriate for the team to be located across several general practitioner practices, they were generally supportive of this idea and felt that patients might be more inclined to take up referrals to services which are provided within a local general practice than in an unfamiliar environment outside of primary care.

Additional themes raised

Aside from the main questions addressed by the general practitioner panel, a number of additional key themes were raised in the interviews which are worth briefly highlighting. These relate to the role of the employer, occupational health services and the current sickness certification system.

With regards to the role of the employer, interviewees regarded early intervention on the part of the employer as essential and some were surprised that an employee could be allowed to be absent from work for periods of around 4-6 weeks without occupational health input. It was suggested that in straightforward cases where illness and absence from work is due to the nature of work activities being undertaken or stresses caused by relationships with colleagues such as line managers, early intervention by an occupational health department could prevent prolonged sickness absence. Interviewees felt that in such cases small changes such as a change of department or other changes to work environment could have a beneficial impact.

General practitioners reported that employers were inappropriately requesting sickness certificates within the seven day self-certification period and that these practices may be more prevalent in larger organisations. While some general practitioners refused to give sickness certificates within the initial seven day self-certification period others felt obliged to do so to protect their patient who may be at risk of losing either their job or their income for the period of sickness absence.

The role of occupational health departments was highly valued by the general practitioners interviewed, where such facilities existed. General practitioners noted that many companies did not invest in an occupational health service, although it was acknowledged that resource limitations make this difficult for small employers. Occupational health departments were seen as fulfilling a role which general practitioners were unable to address, namely interceding on behalf of an employee and negotiating a supported return to work. Occupational health professionals were seen as well equipped to advise on issues such as graduated return to work and workplace modifications, and were knowledgeable about health and safety legislation and of any health risks in the particular work environment in which they were located. Despite the recognition of the strengths of occupational health services, there was little contact between general practitioners and occupational health departments, mainly due to the issue of patient confidentiality. General practitioners were at times unable to provide information at a level of detail that would be useful to the employer because of lack of consent from the patient. Examples cited included cases of alcohol dependence or mental illness.

With regards to the current system of sickness certification, contact between general practitioners and representatives of the incapacity benefits system appears to be minimal. In the present system the decision to move someone onto incapacity benefit is made by a Department of Work and Pensions (DWP) physician. General practitioners reported both positive and negative aspects to this. Some general practitioners were relieved that the ultimate decision about a person's longer term capacity for work had been removed from their jurisdiction, since a decision not to support an incapacity benefit claim could jeopardize the patient-doctor relationship. However, others were frustrated that DWP staff seemed to make the decision about this without much consultation with the general practitioner. General practitioners reported scenarios when patients had been put onto incapacity benefit against the general practitioner's advice and were generally unsure of the extent to which their advice as written on medical reports was taken on board. Contact appears to be limited to a request from DWP for a medical report and a subsequent letter from DWP alerting the general practitioner that a patient had been moved onto Incapacity Benefit.

One suggestion for improving the current system was that certification by other health staff such as practice nurses may be appropriate for the more routine cases, freeing up more time for general practitioners to concentrate on the more complex cases where the issue of returning to work was less clear cut. It was also suggested that in post-operative cases it was questionable as to why general practitioners were required to sign certificates where surgeons had the clear prerogative to decide on length of required recovery time.

Overall, general practitioners were positive about the potential impact of a return to work programme and reported many scenarios in which it would be appropriate to refer patients to such a service. They did not feel that such programme would duplicate existing services. However, general practitioners were concerned about the ethics of

referring patients to such a programme if it was seen purely as a means of getting a patient back to work. They also expressed the view that for some patients it would not be medically appropriate to make a referral to the service. While returning to work may be considered an important aspect of psychological wellbeing, it was clear from the interviews that general practitioners were on the whole less concerned with the broader societal and economic impacts of sickness absence from work than with the (sometimes competing) priority of improving the health of potentially vulnerable individuals. This is an important consideration to take into account when designing the content and structure of a service as its success is likely to be dependent at least to a degree on general practitioner referrals and support.

Limitations of the stakeholder consultation

It is important to note the limitations of the stakeholder consultation. Firstly, the expert panel was comprised solely of general practitioners rather than the wider group of professionals involved in the sickness certification system and return to work interventions. Therefore, the indications about appropriateness have an unavoidable medical bias. In particular, the priority of general practitioners is to restore patient health and this priority sometimes conflicts with wider considerations of the impact of long term absence from work on the economy or on employers.

Any potential reform of the sickness certification system needs to take account of a range of views including patients, employers, occupational health staff, benefits and employment agency staff as well as those working in specialist return to work or supported employment programmes. Healthcare professionals delivering rehabilitative services such as occupational therapy and physiotherapy as well as mental health professionals would also have an important perspective to bring to bear.

Secondly, the consultation was based on opinions from a limited number of stakeholders within a restricted geographical area and therefore was not aiming to provide a representative of general practitioners. There is scope to use the RAND/UCLA methodology to refine the model further, by consulting with a national group of experts, as discussed in the final section of this report.

Acknowledging these limitations, this consultation has employed a systematic method for combining professional opinion with evidence to help model the potential content and structure of an early intervention for preventing the transition to long term sickness absence from work. The evidence presented constitutes preliminary scoping work which must be tested in a further study, the potential structure of which is discussed in the final section below.

4: Discussion and Recommendations

The aim of this scoping project was to develop a potential model of an early intervention for preventing long term sickness absence from work, informed by existing research evidence and consultation with relevant stakeholders. A further aim was to investigate the feasibility of implementing such an intervention by consulting with stakeholders involved in the sickness certification system. While due consideration must be given to the limitations of this scoping study discussed above, a number of clear themes have emerged from our literature review and stakeholder consultation.

Factors influencing referrals to return to work interventions

Our findings suggest that clinical indications play an important role in decisions on the appropriateness of focussing on return to work. While the literature review supports a biopsychosocial model across different health conditions, the general practitioner panellists expressed a clear view that the proposed intervention would be more suitable for patients with musculoskeletal conditions than for those with mental health or cardio-respiratory conditions. However, patients with the latter conditions may be appropriate candidates, in particular where they have longer symptom duration and are not receiving specialist health input from other sources. General practitioners' support for targeting the intervention at those with musculoskeletal conditions may be a reflection of an awareness of the strong research evidence supporting early intervention for this patient group.

There was a clear consensus among the stakeholder panel that the intervention is more appropriate for those not already receiving or awaiting specialist health input. Moreover, it was viewed as appropriate to target patients with no access to other (e.g. work based) occupational health for early intervention as well as to prioritise access to health and social care services for patients on certified sickness absence regardless of employment status. This may indicate a preparedness to assist patients back to 'normal' daily activities.

Although there is a paucity of literature on *early* interventions aimed at promoting a return to work, our study shows that general practitioners are uncertain about the appropriateness of focussing on returning to work any earlier than 7 weeks after the onset of the certification period. The exception is for patients who do *not* have access to an occupational health service. It was seen as appropriate to target the intervention at this group if they have been in receipt of sickness certification for 4-6 weeks. This conflicts with the practices of some occupational health units whereby interventions are initiated very early on in the period of sickness absence, sometimes even within the first week of being certified sick (as identified during the preliminary consultation interviews). The uncertainty about referring patients with relatively short periods of absence (less than 7 weeks) might also reflect the general practitioners' consideration of pragmatic issues. As the majority of patients with, for example, low back pain recover without any specialist input, referral to an early intervention service may have little or no impact for the majority of patients who are certified for short periods.

Consistent with this, there was a general preference for interventions to be targeted at those on repeat, recurrent or extended certification. On the whole, there was uncertainty about targeting the intervention at those on their first episode of sickness

absence except for those with longer symptom duration (a month or over) who are not already receiving or awaiting specialist health input.

There are some key groups that are regarded by general practitioners as inappropriate targets for the intervention, such as patients who have experienced symptoms for less than one month. Although there are indications in the literature that occupational interventions and rehabilitation can be effective for those with certain moderate-severe conditions,^{15;42} the stakeholder consultation suggests that general practitioners are unlikely to find it appropriate to target those with severe conditions. In general, these findings indicate that return to work interventions aimed at all patients who are sickness-certified may not be as acceptable as a targeted approach which takes into consideration the clinical (e.g. prognosis for specific conditions) and non-clinical factors that influence decisions on the appropriateness of focussing on returning to work from a general practitioner's perspective.

Potential service models

The available evidence provides support for an early intervention to help individuals who are certified sick to return to work. However, current evidence focuses on the effect of rehabilitation on clinically relevant outcomes, and there is a lack of clear evidence in terms of vocational outcomes. Existing research broadly supports a biopsychosocial and multidisciplinary approach, although the specific professional input required will vary according to individual needs and patient morbidity. While there is no definitive evidence in the literature about the optimum content of a multidisciplinary intervention or the precise skill mix required for delivering this, the stakeholder consultation provides ways forward, combining research evidence with experience and levels of acceptance at practice level.

There is strong evidence that the intervention should combine biopsychosocial with vocational support and that a multidisciplinary approach is essential. Our findings provide support for an intervention to be delivered either by a multidisciplinary team or by a single healthcare professional or specialist with the relevant multidisciplinary skills for supporting a return to work, in particular occupational health expertise. Such an approach may be achieved through the deployment of occupational health specialists, or through the use of primary care doctors (or possibly nurses) with a special interest in occupational health/ employment matters. Referrals to the service are likely to be appropriate from any healthcare professional from either inside or outside the NHS or from patients themselves. However, there is uncertainty around the appropriateness of employer referrals, which may, in part, reflect concerns about the degree to which the team is viewed as truly being based around the service users' needs and goals.

There is support for locating the intervention within a DWP facility and disagreement over the appropriateness of basing this within primary care. This finding is in line with qualitative research findings^{61;62} which highlight tensions between general practitioners' sense of obligation and advocacy towards their patients and the potential for conflicts regarding employers and the benefits system. This uncertainty is amenable to testing in a formal way through the conduct of carefully designed research addressing this specific issue. Although stakeholders thought that a DWP setting might be best, from the service users' perspective, this may lack credibility and not be viewed as a good thing.

Any model pursued should facilitate timely access to relevant multi-professional input where individual needs require this. The input of healthcare professionals (e.g. a specialist in occupational health, a clinical psychologist) and non-clinical staff such as a return to work coordinator and a representative with knowledge of social security issues and the benefits system is likely to be appropriate. One approach would be to prioritise access to existing health or social care services, where needed, for those on the intervention programme combined with the provision of vocational/occupational health support. An alternative arrangement would involve the creation of multidisciplinary teams, which can supplement existing health and social care services, potentially working across several general practices. The existence of specialist teams may improve communication and collaboration with employers as well as between DWP physicians and general practitioners prior to patients being assessed for incapacity benefit. Another potential benefit of specialist multidisciplinary teams is the greater scope for pursuing a holistic approach which may be particularly important in this context where there can be multiple reasons leading to absence from work.

The recommended intervention has some obvious similarities, in terms of content, to the combined health and workplace intervention tested in the Job Retention and Rehabilitation Pilot (JRRP)¹¹ and this approach was found not to be effective in improving return to work rates. However, there are a number of significant differences between our proposed intervention and that described in the JRRP.

Firstly, we are recommending that sick-certified individuals should be referred to the rehabilitation intervention at a relatively early stage of their sickness absence, to maximise their chances of returning to work – e.g. 4-6 weeks after first going off sick, depending on the natural history of their condition, and certainly by 7 weeks. In the JRRP, 58% participants had entered the trial after 6-12 weeks' absence, 27% entered the trial after 13-19 weeks' absence and 15% after 20 weeks' absence.

Second, we are advocating that sick-certified individuals would normally be referred directly to the service by their general practitioner or another registered health professional. In the JRRP, many participants responded to advertisements (e.g. on posters, radio, or Med3 paperwork) and referred themselves to a Central Contact Centre, who then screened-in only individuals who were thought to be 'at risk' of losing their job or unlikely to return to work without help. Thus, the participants in the JRRP may not have been representative of the general sick-certified population. Indeed, the available figures suggest that females and older workers may have been over-represented in the JRRP sample.¹¹

Third, another difficulty with the JRRP was the relatively high withdrawal rate. Some 30% of participants who were randomised to one of the intervention groups dropped out before they received any intervention and follow-up data was not available for 684 of the 2845 participants. Whilst some of those who dropped out of the trial did so because they had returned to work, there is also evidence that the interventions offered were not always relevant to the participants. Some 30% of individuals in the intervention groups reported that the service had not met their needs fully and 12% of individuals had turned down some of the interventions that were offered – particularly cognitive-behavioural therapy, complementary therapies and contact with their employers. Any return to work intervention would therefore need to assess and address the holistic needs of the individual worker.

Finally, in the JRRP, the primary outcome was return to work for at least 13 consecutive weeks, with the start of the individual's return to work being no later than 28 weeks from the first absence (i.e. before progression to Incapacity Benefit). It is possible that this may have been too ambitious a target, particularly for individuals who had already been off work for a substantial period of time. There was some evidence that the JRRP interventions did have a positive impact on return to work for shorter periods (e.g. for 6 consecutive weeks).¹¹

Testing the model

Within this project, we have employed a method for systematically collecting views on the appropriateness of a return to work intervention aimed at preventing long term incapacity and absence from work. This method provides a framework for developing professionally acceptable national guidelines to influence clinical practice. The RAND/UCLA methodology and the tool, and process designed for this project, provide a systematic method for gathering views across geographically diverse stakeholders and experts. Whilst the approach proved feasible, and appeared acceptable, the report focuses predominantly on the views of general practitioners. These professionals were selected as those most substantially involved in the Med3/Med 5 sickness certification process, and who are also likely to be the main source of referrals to a return to work intervention. However, this methodology should also be replicated with occupational health specialists to highlight the appropriate components and timing of interventions from those with greater understanding of the work environment and its influence on health outcomes.

The other obvious group whose views need to be more explicitly sought is that of potential service users themselves. That the JRRP identified such unpromising results, and observed poor compliance, further supports the need for more rigorous work with service users before interventions are finalised and tested.

The Medical Research Council (MRC) has produced a framework to guide the development and evaluation of complex interventions aimed at improving health.⁵⁹ Complex interventions are made up of "a number of different components, which may act both independently or inter-dependently"⁵⁹ (p.2), and where it is not easy to pinpoint which components (e.g. the mix and skills of the care providers, the timing, the setting, the frequency of the intervention or how it is organised) are the 'active ingredients'.

The MRC framework⁵⁹ argues that RCTs are likely to be the optimal experimental design for accurately estimating the benefits of a complex intervention and suggests a series of phases of investigation which might be used in the development and evaluation of complex interventions:

1. In the *pre-clinical phase*, the relevant theory is explored to identify the intervention that is most likely to be effective, how it might be evaluated and what the potential barriers and facilitators might be. This phase typically includes a review of the relevant evidence from the existing literature.

2. In the *modelling phase*, the key components of the intervention are identified (e.g. its content, duration, timing, location, skill mix and expertise required), together with any likely weaknesses and the underlying mechanisms by which it may influence the outcomes of interest. This phase may include formal computer modelling or simulation, case studies, structured surveys, qualitative interviews or focus groups to

obtain the views of all relevant stakeholders, including those likely to receive, deliver or refer to the intervention.

3. The *exploratory trial phase* represents a crucial opportunity to test, on a small scale (ahead of the main RCT), the utility, practicality and desirability of the key components of a larger RCT (e.g. recruitment methods, randomisation process, outcome measures and data collection processes, the sample size required, likely drop-out rates) as well as an opportunity to pilot (and make any necessary modifications to) the intervention itself.

4. In the *main trial or definitive RCT phase*, the fully-defined intervention is compared to an appropriate alternative, following a theoretically-sound and well-designed protocol with appropriate statistical power.

5. In the final *long-term surveillance phase*, a separate (typically observational) study is undertaken to establish the long-term effectiveness of the intervention in a wider, real-life setting, outside of the research context.

So far, the scoping work described in this report has contributed only to the pre-clinical and modelling phases of the above process, in terms of completing a literature review and obtaining the views of general practitioners. As discussed above, the views of other relevant stakeholder groups – including service users, employers, occupational health representatives and other professional groups who may deliver the service (e.g. physiotherapists) – have yet to be explored.

Box 8: Proposals for future research

- The acceptability, feasibility and effectiveness of return to work interventions for patients with varying clinical indications, in particular patient condition, severity and symptom duration;
- The preferred location of a return to work intervention from the perspective of patients and professionals involved in the sickness certification system, and the relative effectiveness of different locations;
- Acceptable methods for involving employers in a return to work intervention;
- Views of key stakeholders such as employers, occupational health specialists and patients on appropriate components of the intervention;
- The appropriate timing of an early return to work intervention;
- Modelling the likely level of demand/ patient throughput for a return to work intervention and consequent resource implications;
- The predictors of transition from Med3 to long-term sickness absence;
- The true number of Med3 certifications issued and the reasons behind these certifications;
- The impact of work focused interventions on vocational outcomes as well as on clinically relevant outcomes.

Conclusion

This project has highlighted the complex relationship between achieving desirable health outcomes and the need to initiate early return to work interventions. This project has combined outcomes from research evidence and stakeholder consultation to develop a potential service model for facilitating return to work intervention. The clinical and non-clinical factors identified as likely to influence the utilisation of the service as part of this project provides a framework for targeting patients and interventions accordingly. Building on the findings of this project, it is recommended that further work (see Box 8 above) is carried out on developing nationally and professionally acceptable clinical guidelines as well initiating high quality research evidence addressing the effectiveness of service models for enabling patients to return to work early following a period of sickness absence.

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Appendix 1: Literature Review Tables

TABLE 1.1: SYSTEMATIC REVIEWS OF INTERVENTIONS FOR BACK PROBLEMS

(a) CHARACTERISTICS						
Authors and Date	Population/ setting	Clinical condition(s) and duration	Number and type of studies included	Type(s) of intervention(s) reviewed	Intervention complexity code ^a	Outcome measure(s) included
BACK PROBLEMS (ALL TYPES) – Multidisciplinary Rehabilitation						
Waddell & Burton (2004) ⁶	<i>Not described</i>	Back conditions	Systematic and other reviews	Biopsychosocial rehabilitation	1	<i>Not described</i>
SUB-ACUTE BACK PAIN – Multidisciplinary Rehabilitation						
Karjalainen et al (2003) ²⁷	Study 1: Male and female (age 19-64 years) blue collar workers at Swedish car manufacturing company who were sick-certified for 8 weeks. Study 2: Canadian male and female patients with thoracic or lumbar back pain who were absent from work more than 4 weeks but less than 3 months in previous year. Occupation not specified. Interventions in outpatient settings.	Sub-acute low back pain (>4 weeks but <3 months)	2 RCTs	Rehabilitation programme was required to be multidisciplinary - i.e. consisting of physician's consultation plus either a psychological, social or vocational intervention, or a combination of these.	1	Work-related: Return to work (weeks before return to work);ability to work (median days off) Clinical: Pain intensity; subjective disability; disorder specific functional status and generic functional status; pain behaviour and physical exam of mobility, strength and fitness
CHRONIC BACK PAIN – Multidisciplinary Rehabilitation						
Guzman et al (2001) ²¹	Adults - workers selected from insurance listings or patients referred to pain clinics. Intervention settings: inpatient or outpatient.	Chronic low back pain (≥3 months)	10 RCTs	Multidisciplinary biopsychosocial rehabilitation (MBR) - a minimum of the physical dimension and one of the other dimensions (psychological or social/ occupational).	1	Work-related: Employment status Clinical: Pain severity; global improvement; functional status Other: Quality of life
BACK PROBLEMS (ALL TYPES) – Any Intervention						
Elders et al (2000) ¹⁸	Working age adults on sick leave for <1 year. Recruited from workplace, medical centres, spine clinics, compensation claimants.	Back disorders (i) acute (<30 days) (ii) sub-acute (30 days to <12 weeks) (iii) chronic (>12 weeks)	12 RCTs and prospective cohort studies	Ergonomic, non-invasive and non-medical interventions aimed at prevention of aggravation or prolonged sickness absence, including: (a) organisational and administrative interventions (modified work; early return to work with graded activity); (b) technical, engineering or ergonomic interventions (adjustment to workspace, (re)design of working aids or tools); (c) personal interventions in group settings	1	Work-related: Return to work Other: Compliance; sustainability

				(personal protective equipment; exercise and functional conditioning; training in work methods, lifting techniques, back schools; education).		
Waddell & Burton (2000) ⁴⁹	<i>Not described</i>	Low back pain	Review of systematic reviews, narrative reviews, individual scientific studies	Range of interventions – clinical treatment, bed rest, activity, back schools, exercise therapy, back exercises, comprehensive rehabilitation, early interventions, multidisciplinary rehabilitation, occupational interventions (e.g. modified work).	1	<i>Not described</i>
Tveito et al (2004) ⁴³	Not specified - assumed working age adults. Workplace based interventions in light industry, hospital, mining and 'various' workplace settings	Low back pain - prevention and treatment studies	28 studies (4 treatment intervention studies)	Some treatment interventions (4 studies) but majority were preventive interventions (24 studies). <i>Treatment interventions:</i> combinations of various medical, psychological and social/occupational interventions - focusing on several of factors associated with LBP. Several imply 'early' or 'immediate' assessments, referrals and treatments were offered. <i>Preventive interventions:</i> categorised into (a) educational - e.g. back schools; (b) exercise; (c) back belts; (d) multidisciplinary (including physical therapy, exercise, ergonomics, behaviour therapy, prevention of pain and reinjury; education; physical fitness activities); (e) pamphlet based.	3	Work-related: Lost work days; sick leave due to LBP; return to work. Clinical: New episodes of LBP; level of pain; function. Other: Cost or cost-effectiveness - in relation to lost time, claims and medical expenses; number of claims due to back pain
WORK-RELATED LOW BACK PAIN (ALL TYPES) – Any Intervention						
Williams et al (2007) ⁴⁷	Adults - employees and patients . Settings: Majority in workplace (various industries); 2 in clinic setting	Work-related musculoskeletal low back pain	10 RCTs and cohort studies	Secondary prevention – interventions categorised as: (a) Early return to work/modified work; (b) Clinical interventions with occupational interventions; (c) Ergonomics including exercises and lumbar supports; (d) Exercises and workplace visits; (e) Supervisor involvement for return to work.	3	Work-related: Return to work status; duration of absence from work/sick leave; time lost and cost data; work adaptation; work modification; lifting capacity Clinical: Disability; pain; functional status Other: Injury statistics
SUB-ACUTE BACK PAIN – Any Intervention						
Pengel et al (2002) ³⁷	Patients with sub-acute LBP lasting between 7 days and 6 months (or sick leave of this	Sub-acute low back pain (6 weeks to 3 months)	13 RCTs	Any type of conservative treatment including: manipulation, back school, exercise, advice, TENS, hydrotherapy,	3	Work-related: Return to work; Clinical: Pain; disability.

	duration)			massage, corset, CBT and coordination of primary care. Surgical intervention was excluded.		
Hlobil et al (2005) ²⁴	Adult workers who were absent from paid work for at least 4 weeks (but no more than 2-3 months) duration. Outpatient settings.	Sub-acute low back pain (≥ 4 weeks but < 3 months)	9 RCTs	Any type of outpatient intervention aimed at return to work for sick-listed workers with low back pain. One study included an early intervention group. Another had a 'stepped approach', adding multidisciplinary rehabilitation if the patient did not respond to 4 weeks of occupational intervention and back school	1	Work-related: Absenteeism expressed as (a) return to work rate (based on dichotomous measure); (b) number of days of absence from work. Clinical: Pain; functional status
LUMBAR DISC SURGERY – Post-operative Rehabilitation						
Ostelo et al (2002) ³⁶	Age 18-65 years. Patients who had first-time lumbar disc surgery (all types of surgical techniques) because of lumbar disc prolapse. Some in general health care setting; some in work setting.	Lumbar disc surgery (post-operative)	13 RCTs and CCTs	One or more types of active rehabilitation programmes, aimed at functional restoration (improvement in functional status and return to work). Categorised as: (a) treatment programmes starting immediately post-surgery; (b) treatments starting 4-6 weeks post-surgery; (c) rehabilitation programmes starting more than 12 months post-surgery. Excluded: treatments aimed solely at pain relief (e.g. medication) or improvement of physical outcomes (strength, flexibility).	3	Work-related: Return to work (e.g. return to work status; days off work) - in 6 studies only. Clinical: Pain; back pain functional status; global measure of improvement; outcomes of physical examination; behavioural outcomes (e.g. anxiety, depression, pain behaviour; medication use; side effects
LOW BACK PAIN (ALL TYPES) – Exercise Interventions						
van Tulder et al (2000) ⁴⁴	Adults (age 18 to 65 years) being treated for non-specific LBP (majority of study samples with chronic LBP). Treatment in primary health care or occupational settings	Low back pain (i) acute (≤ 12 weeks) (ii) chronic (> 12 weeks)	39 RCTs	Exercise therapy - one or more types of exercise therapy - including specific back exercises; abdominal, flexion, extension, static, dynamic, strengthening or aerobic exercises - if they were prescribed or performed in the treatment of low back pain.	2	Work-related: Return to work; mean duration of sick leave; number of patients on sick leave; number of patients 'with satisfactory result at work'. Clinical: Functional status; pain; % with recurrence of pain in follow up period; number of patients symptom-free or improved; mobility; spinal mobility; daily activities; disability score; disability days; medication

						days; generic health; global improvement Other: Mean costs of care; indirect costs; mean number of treatments to reach symptom-free status; overall treatment effect; satisfaction with treatment.
Kool et al (2004) ²⁹	Adults available for the job market (employed or unemployed and seeking work). Patients requiring treatment or sick-listing for LBP or employees with history of LBP. Inpatient or outpatient clinic settings, health centre or home-based treatments	Non-specific low back pain for at least 4 weeks	14 RCTs	Various forms of exercise (alone or as part of a multidisciplinary treatment) - including; extensive rehabilitation; light rehabilitation; conventional physiotherapy; medical exercise therapy; active back school; inpatient rehabilitation; outpatient rehabilitation; graded activity; Mensendieck exercise group.	3	Work-related: Sick leave outcomes used in meta-analysis: (a) Mean number of sick days; (b) Proportion of patients who returned to work; (c) Proportion of patients not at work; (d) Proportion of patients receiving disability allowance. Sick days were most commonly used outcome - reported in 8 studies.
Hayden et al (2005) ²²	Adults (mean age 41 years; range 39-42 years) with chronic LBP (43 trials); acute LBP (11 trials); or sub-acute LBP (6 trials); (1 trial diagnosis unclear). Intervention settings: healthcare (primary, secondary, tertiary care); occupational; general population; mixed	Non-specific low back pain (i) acute (<6 weeks) (ii) sub-acute (6-12 weeks) (iii) chronic (>12 weeks)	61 RCTs	Exercise therapy – defined as: "a series of specific movements with the aim of training or developing the body by a routine practice or as physical training to promote good physical health".	3	Work-related: Return to work or absenteeism. Clinical: Pain; function; global improvement outcomes.
LOW BACK PAIN (ALL TYPES) – Physical Conditioning Interventions						
Schonstein et al (2003) ^{38,39}	Adults (age >16 years) with work disability related to back (sick listed or working on restricted duties). Range from 3 weeks to 6 months off sick or on restricted duties. Range of settings: inpatient, outpatient or workplace.	Back pain (i) acute (<4 weeks) (ii) sub-acute (4-8 weeks) (iii) chronic (>8 weeks)	18 RCTs	Physical condition programmes (consisting of work conditioning, work hardening and/or functional restoration/exercise programmes) - review focuses on interventions with intended improvement of work or functional status. Included interventions that were work/function-related physical rehabilitation programmes designed to restore individual's systemic, neurological, musculoskeletal and/or cardiopulmonary function.	3	Work-related: Sick leave days; days lost; self-reported work status; duration of sick leave; return to work; type of work returned to (full, limited, modified); ability to work. Clinical: Functional status; pain; flexibility, muscular strength and endurance; disability; mobility. Other: Various – including service use; other costs;

						psychological symptoms; sleep; attitudes; compliance; quality of life; satisfaction.
LOW BACK PAIN (ALL TYPES) – Organisational Interventions						
Maier (2000) ³²	Employees from sectors with history of high prevalence of LBP – e.g. health care, factory and warehouse, airline, and postal workers	Low back pain – prevention studies	13 RCTs	Workplace interventions to prevent LBP - scope included prevention of cases or the sequelae of LBP.	3	Work-related: Sick leave (number of days); number of workers with absence in follow up period; mean work days lost; sick listing trend Clinical: Pain; observed pain behaviours; Other: Number of days with complaints; prevalence of LBP; cases/episodes of LBP; various cost measures.
LOW BACK PAIN (ALL TYPES) – Educational Interventions						
Heymans et al (2004) ²³	Adults: age 18 to 70 years. Outpatients; health plan patients; general practitioner patients; nurses; company/industry employees; occupational health attendees; volunteers	Non-specific low back pain (i) acute/sub-acute (≤ 12 weeks) (ii) chronic (>12 weeks)	19 RCTs	Back school type of intervention – defined as consisting of an educational and skills acquisition programme, including exercises, in which all lessons were given to groups of patients and supervised by a paramedical therapist or medical specialist. Multidisciplinary treatment programmes were only included if a contrast existed for the back school.	3	Work-related: Return to work (no. days sick leave or proportion of patients returned to work) Clinical: Pain; global measure of improvement; functional status.
(b) DESCRIPTION OF INTERVENTIONS						
Authors and Date	Range of components included across studies				Intensity, duration and timing	
BACK PROBLEMS (ALL TYPES) – Multidisciplinary Rehabilitation						
Waddell & Burton (2004) ⁶	<i>Individual interventions not described</i>				<i>Not described</i>	
SUB-ACUTE BACK PAIN – Multidisciplinary Rehabilitation						
Karjalainen et al (2003) ²⁷	<i>Physical:</i> Physician consultation; graded activity/increasing intensity exercise programme; consultation with back specialist <i>Psychological:</i> Operant conditioning behavioural approach (to increasing activity) <i>Occupational or social:</i> Workplace visit; referral to occupational physician <i>Educational:</i> Back school type education				Study 1 provided gradually intensifying exercise programme over unspecified period. Study 2 provided occupational input at 6 weeks, back specialist input at 8 weeks, multidisciplinary rehabilitation at 12 weeks with therapeutic return to work at 17 weeks.	
CHRONIC BACK PAIN – Multidisciplinary Rehabilitation						
Guzman et al (2001) ²¹	<i>Physical:</i> Exercises, weight training, stretching, medication, pain management, epidural injections, ice application, hydrotherapy. <i>Psychological:</i> CBT or BT or relaxation training (groups or individual), counselling, biofeedback, education, recreational				Most programmes were standardised (content and duration) with limited individualisation in intensity. Programmes fell into two main categories: daily	

	activities, group discussions, psychiatrist referral, relaxation tapes. Occupational or social: Individual consultation for work problems, job seeking courses, meetings with employers or relatives, social worker input, education, counselling to address work or family problems	intensive programmes (>100 hours therapy per week) and 1-2 times weekly programmes (<30 hours therapy per week).
BACK PROBLEMS (ALL TYPES) – Any Intervention		
Elders et al (2000) ¹⁸	Physical: Exercise and functional conditioning; graded activity/exercise; pain relief Occupational or social: Work simulation; workplace visit Educational: Physician notification of treatment guidelines (1 study); patient education (9 studies); training in work methods and lifting techniques (8 studies)	Intensity and duration not described. 1 study used an early intervention programme (unspecified timing)
Waddell & Burton (2000) ⁴⁹	Physical: Bed rest; activity; specific back exercises; exercise therapy; graded activity programmes; physical fitness programme; pain centre treatment; non-steroidal anti-inflammatories (NSAIDs), muscle relaxants; manipulation; conventional physiotherapy; functional restoration; referral to back specialist. Psychological: Behavioural therapy; cognitive-behavioural therapy; counselling interventions. Occupational or social: Occupational rehabilitation; modified work programmes; graded work; workplace adaptation; early return to work programme. Educational: Advice to stay active; back schools; educational interventions; management retraining; educational booklets. Communication: Pro-active and employee-supported communication between workplace, employee, healthcare and other involved parties; managed care; case management; cooperation between management and clinicians; training/educating supervisors and workers.	<i>Not described</i>
Tveito et al (2004) ⁴³	Physical: Treatment interventions: Medical assessment; referrals to 'general care', medical specialities, physical therapist or occupational therapist. Prevention interventions: Exercise, physical fitness activities, physical therapy Psychological: Some treatment interventions offered options of counselling and/or referral to psychologist. One prevention intervention included behaviour therapy Occupational or social: 'Occupational intervention' (undefined); emphasis on early return to work Educational: Staff education on LBP	Generally appear to start early - e.g. 1 study with referral to OT after 4 days sick leave; other interventions started after 6-8 weeks sickness absence. Little detail on duration and intensity of interventions.
WORK-RELATED LOW BACK PAIN (ALL TYPES) – Any Intervention		
Williams et al (2007) ⁴⁷	Physical: Exercises (light mobilisation and graded activity); Fitness development; Physical therapy; Lumbar supports Occupational or social: Early return to work/modified work: including early assessment, treatment and rehab via modified work for up to 7 weeks. Work hardening programme (simulated work tasks); alternating days at original job with increased tasks and days of functional therapy, ergonomic evaluation and worksite evaluation to determine need for job modifications. Therapeutic return to work (graded work exposure and functional restoration). Ergonomic interventions: including workplace adaptation, adaptation of job tasks; adaptation of working hours; exercises and education focusing on ergonomics; worksite visit. Early contact with the worker by the workplace Educational: Education focusing on ergonomics; posture correction; workshops for supervisors about back and neck injuries (2.5 days)	Intensity and duration rarely specified. One study reports early intervention maximum duration as 7 weeks. In one other study, a supervisor education workshop lasted 2.5 hours.
SUB-ACUTE BACK PAIN – Any Intervention		
Pengel et al (2002) ³⁷	Physical: Physical examination; exercises (e.g. endurance training; mobility, stretching, flexion, extension and strengthening exercises; cardiovascular training; individually graded exercise programme); physical agents (e.g. spinal manipulation, hot packs, short wave diathermy, acupuncture, TENS, hydrotherapy, massage, corset, balneotherapy). Psychological: Relaxation; cognitive-behavioural modification; operant conditioning programme. Occupational or social: Workplace-based interventions; workplace visits Educational: Low back school (instruction about LBP, audiotape instructions, pamphlets and telephone reinforcement); back advice and booklets; reassurance and advice to stay active; education (1 study using a cognitive-behavioural approach)	Duration varied - e.g. one 4-hour session (back school); 1-3 visits for physical examination and advice; up to 4-6 weeks (exercise with physical agents, and 2 complex interventions); from 3 to 12 weeks (physical agents); duration unspecified in 2 studies. Intensity not always described - but varied according to nature of intervention. Range from:

	<p>Communication or coordination: In 3 studies – Coordination of primary health care (involving recommendations for management, support to carry out recommendations and weekly telephone contact with patient); telephone contact with patient</p>	<p>for physical agents, spine manipulation: 8 sessions in 12 weeks; or 3 sessions a week for 3 weeks; TENS: 8 hours a day for 3 weeks; balneotherapy: 3 times a week for 4 weeks; for exercises, 3 sessions a week for 6 weeks; for complex interventions, 5 days a week for 4 weeks or 8 sessions in 4 weeks</p>
Hlobil et al (2005) ²⁴	<p>Physical: Exercise (or advice about it), graded activity/exercise programme; light mobilisation programme; modified Norwegian aerobic fitness model; examination by physician; recommendations for clinical management; 'usual care', physical therapy, occupational therapy, referral to spine/back pain specialist clinic</p> <p>Psychological: Cognitive behavioural treatment; general support and encouragement to carry out recommended interventions and resume daily activities/work</p> <p>Occupational or social: Ergonomic assessment and interventions - discussions about job modifications; re-education in alternative jobs where necessary. Workplace visit.</p> <p>Educational: Education - including: information about good prognosis of LBP, advice to remain active, instructions on stretching exercises, causes of back pain, relation between emotions and pain; provided with guidelines on lifting and how to deal with muscle spasm/new attacks; explanation of x-rays and scans; explanation of pain mechanisms, education on muscle function. Back school.</p> <p>Communication or coordination: In 3 studies – case management and interdisciplinary conferences; coordination of primary health care by nurse who also called the worker weekly until return to work; discussions between health services and employer about job modifications.</p>	<p>Varied in intensity from 2-3 sessions a week to 2 sessions in total. One study full-time: 5 days/week (6 hour sessions). Duration of interventions varied from < 5 hours in total up to 3 months</p>
LUMBAR DISC SURGERY – Post-operative Rehabilitation		
Ostelo et al (2002) ³⁶	<p>Physical: Exercises (range of types and muscle groups, of varying intensity) or general increase in physical activity; physiotherapy; occupational therapy; medical management and assessment; physical agents, e.g. manipulation, TENS, ultrasound, heat packs.</p> <p>Psychological: In 2 studies only – Pain coping; psychologist input (approach unspecified).</p> <p>Occupational or social: Back school, 'instruction' (not specified), comprehensive educational package (including joint protection techniques, nutrition, stress and pain management, vocational enhancement), promotion of self-management, information/advice giving.</p> <p>Educational: In 4 studies – Social worker input (1 study); work capacity evaluation and work simulation (1 study); assessment of work incapacity period by medical advisor (1 insurance medicine study); ergonomic sessions.</p> <p>Communication or coordination: In 1 study – Medical adviser liaising with treating physician and working with patient, encouraging multidisciplinary approach and rehabilitation measures.</p>	<p>Range of duration - usually starting from 4-6 weeks post-surgery; for 1-2 weeks up to 12 weeks. Some just 1 session; some unspecified duration. Intensity not always indicated - for exercise programme sessions ranging from 2-5 times weekly</p>
LOW BACK PAIN (ALL TYPES) – Exercise Interventions		
van Tulder et al (2000) ⁴⁴	<p>Physical: Exercise therapies varied from low-intensity (e.g. walking) to high-intensity exercises (e.g. graded activity programmes, dynamic endurance exercises, and intensive training programme). Wide range of specific types of exercises studied, including: home training plus dynamic strength exercises; strengthening exercises plus spinal manipulation; stretching exercises plus spinal manipulation; flexion exercise programmes (e.g. Williams); extension exercise programmes (e.g. McKenzie); exercises including all ranges of motion and muscle groups; relaxation and stretching exercises with or without TENS; fitness programme (warm-up, stretching, progressive exercises, light aerobic exercises); intensive dynamic back muscle training; dynamic back, neck and abdominal endurance exercises; mobilisation and strengthening exercises; graded activity programme; conventional physiotherapy exercises; isometric exercises; deep abdominal muscle training; work tolerance rehabilitation programme; intensive group training programme; self-exercise (walking); aerobic exercises (walking/jogging)</p>	<p>Duration varied from three treatment sessions in 5 days to 12 months of home exercise training.</p>

	programme); mild static trunk exercises and short-wave diathermy and posture training; bed rest with light progressive, moderate progressive and heavy progressive exercises; Psychological: 1 study included 'operant conditioning behavioural therapy' within the exercise programme. Educational: Back school education (1 study); general advice and teaching of McKenzie principles by physiotherapist (1 study); home care instructions in back care, body mechanics and pelvic tilt exercises (1 study). Not reported for most studies.	
Kool et al (2004) ²⁹	Physical: Exercises - including: aerobics, weight training, stretching. Some supervised, some self-guided and some home exercise training by physiotherapist. Graded activity (individualised) - gradually increasing exercise. Mensendieck exercise group (warm up and stretching exercises). Medical Exercise Therapy (in groups). Conventional physiotherapy (heat or cold massage, traction, electrotherapy, individually tailored exercises). Physical therapy using McKenzie method (self-mobilisation with repeated movements, mobilisation by physiotherapist). Physician examination - e.g. at spine clinic. Physical agents - e.g. heat or electrotherapy. Bed rest gradually increasing to light, medium and heavy activity Psychological: Relaxation, psychological group therapy (unspecified approach), structured group discussions (unspecified content/approach), appointment with psychologist if required; cognitive behavioural modification (group sessions); cognitive behavioural disability management groups. Psychological pain management. Information about fear avoidance Occupational or social: Work hardening and graded activity; assessment of functional capacity, workplace visits, workplace interventions if required. Ergonomic information. Ergonomic training Educational: Swedish back school; Active back school; back school delivered in groups by physiotherapist. Information provision, advice to stay active/go for daily walks	Varied between studies and types of intervention - some multidisciplinary interventions were light, others intensive/extensive
Hayden et al (2005) ²²	Physical: Exercise therapy delivered via individually tailored, group or independent home programmes - including a range of exercise combinations (e.g. warm-up, endurance, extension, aerobic, strengthening, stretching, bending, flexion, isometric, flexibility, mobilising, coordination, stabilising, rotation, lifting, walking, slow jogging, posture, cool-down, and relaxation exercises); intensive training programmes; McKenzie analysis and exercises; 'conservative physiotherapy'; 'standard physiotherapy'; individual graded-activity programmes; use of gym/machines, stationary bikes or resistance bands; water aerobics; manipulation; passive exercises; massage; manual therapy; active back school (30 minute exercise session); analgesia or NSAIDs; TENS; electroacupuncture; Hatha yoga; lumbar support; low-power laser therapy Psychological: Behavioural therapy incorporated into six programmes (one with spousal participation) Occupational or social: Ergonomic advice Educational: Education' (content usually undefined); information (usually undefined); education on McKenzie principles plus general advice; advice to stay active; back school education	Total intervention times range from 2 hours up to 150 hours. No other information on intensity, timing or duration. Authors note that only 54% studies adequately described the exercise intervention.
LOW BACK PAIN (ALL TYPES) – Physical Conditioning Interventions		
Schonstein et al (2003) ^{38,39}	Physical: Exercises (e.g. flexibility, strength, endurance, stretching, coordination) and encouragement of general physical activity - guided or self-practised or home programmes; some intensive programmes; some in groups; some individual; some using CBT/BT approaches. Graded exercise/activity. Physiotherapy; aerobic fitness training; monitoring of medication intake. Referral to back specialist after 8 weeks of absence; graded medical exercise therapy. Psychological: In 9 studies: CBT discussion groups (disability management) - including: relaxation, visual imagery, problem-focused discussions, homework, reconceptualising problems, appraisals, attitudes and beliefs; problem-solving and decision-making skills. Group support offered in classes. Psychological pain management - relaxation and biofeedback (by clinical psychologist). Counselling to address pain related disability issues, attitudes, job satisfaction, depression/anxiety, anger, sleep disruption etc. CBT/BT including relaxation therapy, biofeedback, individual and group counselling Occupational or social: Vocational rehabilitation included via group and individual educational sessions. Work hardening, ergonomic training. Workplace visit. Progressive return to work Educational: Classes on mechanisms of pain; education sessions on variety of topics delivered by physicians, therapists, psychologists, social worker, nutritionist. Teaching of active pain management techniques, stress management, problem	Duration ranged from 1 single session (physiotherapy /exercise), up to 8-12 weeks programme. Intensity varied from single 1 hour sessions, up to daily attendance (5-8 hours per day). Total hours (where specified) range 4 hours up to 200-300 hours. Some studies with unspecified intensity and/or duration.

	solving techniques, relaxation and guided imagery as well as multidimensional theory of pain. Instruction on correct posture to prevent pain and recurrence. Back school education. Audio tape and book for home instructions	
LOW BACK PAIN (ALL TYPES) – Organisational Interventions		
Maher (2000) ³²	<p>Physical: Exercise: including group Callisthenics (2 studies); 1-hour training programme to improve coordination, strength, endurance and fitness (1 study); range of exercises (endurance, strength, functional exercises with access to physiotherapist for advice if needed) (1 study); residential vigorous exercise programme with behavioural therapy (1 study). Braces: 4 studies provided braces (with various features - e.g. adjustable strap, Velcro fasteners, flexible stays, moulded lumbar insert).</p> <p>Psychological: 'Behavioural therapy (to control pain and promote healthy lifestyle)' included in 1 study only (with exercise).</p> <p>Occupational or social: 2 studies included workplace modification as part of the intervention - 'physical and procedural modifications to workplace' (with back school education - 1 study); 'ergonomic improvements to workplaces (with education, training and physical fitness activities - 1 study)</p> <p>Educational: Education alone: 2 studies - group educational programme for 1.5 hours; 120 minute lecture on back care. With another component: Back school included in 2 studies (1 with exercise; 1 with workplace modification); training on spine anatomy and/or body mechanics included in 2 studies (with braces). 'Education and training' included in 1 study (with workplace modification and physical fitness activities).</p>	Intensity and duration varied according to type of intervention. For exercise: range from 5 weeks to 18 months - e.g. 45 minute session twice weekly for 3 months; 1 hour twice weekly for 1 year; 20 minutes 6 times a month for 13 months; 1 session of 30 minutes per week plus commitment for home exercise for 30 minutes at least once a week; 5-week residential programme, 4 hours a day. For educational programmes: One off group session (1.5 hours) or lecture (2 hours). Back school - 2 sessions with 3-4 reinforcement sessions.
LOW BACK PAIN (ALL TYPES) – Educational Interventions		
Heymans et al (2004) ²³	<p>Physical: Exercises (e.g. isometric and dynamic strength, stretching, back and abdominal exercises, postural exercises, sitting and standing exercise, lumbar flexion, extension, stabilisation), fitness training and advice on physical activity (e.g. walking, daily activities, swimming, jogging, cycling) - typically supervised by physiotherapist; often in group setting, sometimes with home programme. Heat or electrotherapy and massage. Session with physiologist and physician. Individual physiotherapy sessions</p> <p>Psychological: Relaxation; information on psychological factors; behavioural therapy techniques</p> <p>Occupational or social: Ergonomic counselling; sessions on ergonomic principles; simulation of work activities</p> <p>Educational: Single instruction session on back pain; series of educational sessions and/or group discussions (e.g. anatomy, pathology, causes of LBP, semi-Fowler position, ergonomic, optimal posture, body mechanics, lifestyle changes and coping mechanisms); compliance package (ongoing instruction and reinforcement by telephone and mail). Some studies included refresher sessions/course - e.g. after 6 months or 1.5 years</p>	Varied intensity and duration - e.g. 4 x 45 minute sessions in 2 weeks; single 4-hour session; 6 x 90 minute sessions in 8 weeks; 4 x 90 minute sessions in 2 weeks plus extra session after 2 months; 10 sessions (?duration) in 4 weeks; 3 x weekly sessions (?duration); 6 x 60 min sessions in 3 weeks plus refresher course 2 x 60 mins after 6 months; 3-week inpatient rehab programme (4 sessions back school, 15 sessions back exercises, 9 sessions relaxation); 4 x 5 hour sessions (2 group and 3 individual sessions of 1 hour); 7 x 2.5 hour lessons and refresher lesson after 8 weeks; 3 x 2.5 hour lessons and refresher lesson after 6 months; 3 sessions (unspecified intensity/duration); 4 x 45 min sessions in 2 weeks; 3 x 90 min sessions in 8 weeks; 5-weeks in back clinic, 8 hours a day; 20 x 1 hour sessions for 13 weeks; 21 x 85 min sessions for 10 weeks; 4 x 1 hour sessions in 1 week.
(c) MAIN FINDINGS		
Authors and Date	Authors' findings and conclusions	
BACK PROBLEMS (ALL TYPES) – Multidisciplinary Rehabilitation		
Waddell & Burton (2004) ⁶	There are strong theoretical arguments, general consensus and a lot of circumstantial evidence for a common biopsychosocial framework to rehabilitation that addresses the health condition, personal factors and occupational factors. There is strong evidence this general approach can be effective across a range of common health problems. However, there is wide variation, lack of clear definition and limited evidence on the optimum content or intensity of a biopsychosocial rehabilitation intervention. For back pain: Successful interventions incorporated (i) physical conditioning programme, specifically designed to restore the patient's systemic, neurological, musculoskeletal or cardio-respiratory function; (ii) significant	

	cognitive behavioural components (e.g. correcting dysfunctional beliefs); (iii) close association with the workplace with work-related goals and outcomes
SUB-ACUTE BACK PAIN – Multidisciplinary Rehabilitation	
Karjalainen et al (2003) ²⁷	Only two relevant studies were found and both demonstrated a statistically significant difference in return to work. Average return to work was 10 weeks (Study 1) or 60 days (Study 2). In Study 2, return to work was 2.4 times faster for the occupational and clinical intervention group compared to usual care and 1.91 times faster in the groups with an occupational intervention compared to those without. Both were considered to be methodologically low quality RCTs but their clinical relevance was sufficient. There is moderate scientific evidence showing that multidisciplinary rehabilitation, which includes a workplace visit or more comprehensive occupational health care intervention, helps patients to return to work faster, results in fewer sick leaves and alleviates subjective disability. Conclusions: There is moderate evidence of positive effectiveness of multidisciplinary rehabilitation for subacute low back pain and that a workplace visit increases the effectiveness. Because this evidence is based on trials with methodological shortcomings and several expensive multidisciplinary rehabilitation programmes are commonly used for uncomplicated or non-specific back problems, there is an obvious need for high quality trials in this field.
CHRONIC BACK PAIN – Multidisciplinary Rehabilitation	
Guzman et al (2001) ²¹	For intensive MBR with functional restoration - (a) strong evidence of improvements in function c/w non-MBR; (b) moderate evidence of reduction in pain c/w non-MBR or usual care; (c) contradictory evidence regarding vocational outcomes - 1 study reported improvements in 'work readiness'; 2 studies showed no benefit on sickness leave. For less intensive MBR - no improvements in pain, function or vocational outcomes c/w non-MDR or usual care. Intensive MBR programmes are more effective than less intensive MBR or usual care in restoring function and reducing pain.
BACK PROBLEMS (ALL TYPES) – Any Intervention	
Elders et al (2000) ¹⁸	Few studies have been performed to assess return to work (RTW) after ergonomic intervention. 8/12 reports showed a significant overall difference in RTW between the intervention group and comparison groups (7/8 were back schools). The absolute reduction of sickness absence and time lost from work ranged from 22-42%. There is evidence that back-school type interventions in the sub-acute phase of back pain are most preferable (i.e. suggesting intervention should not start too soon). Many demonstrated an effect 60 days or more after the intervention started (i.e. suggesting considerable follow-up is required). Compliance during the interventions was fairly good. Little information on sustainability of compliance and effectiveness. Note: For the 1 study with 'early intervention with integrated approach', after 1 year, 90% intervention patients had RTW c/w 79% in controls.
Waddell & Burton (2000) ⁴⁹	Principal recommendations for management of worker presenting with back pain: (a) Clinical recommendations: advice to continue with ordinary activities (strong evidence) supplemented with simple educational interventions designed to overcome fear avoidance beliefs and encourage patient to take responsibility for their own self-care (moderate evidence). (b) Occupational recommendations: Encourage the worker to remain at work or return to work at early stage, considering the following steps to facilitate this: communication, cooperation and common agreed goals between the worker, the OH team, supervisors, management and primary health care professionals is fundamental for improvement (moderate evidence); advice to continue ordinary activities as normally as possible (including work) with support provided to achieve this (limited evidence); consider temporary adaptations of job or work pattern. Principal recommendations for management of worker having difficulty returning to normal occupational duties at approximately 4-12 weeks: Various treatments for chronic LBP may produce some clinical improvement but most are quite ineffective at returning people to work once they have been off work for a protracted period with LBP (strong evidence). From an organisational perspective, the temporary provision of lighter or modified duties may facilitate return to work and reduce time off work (moderate evidence), although this may act as a barrier to normal work, particularly if no lighter or modified work is available (no scientific evidence). Changing the focus from purely symptomatic to an 'active rehabilitation programme' can produce faster return to work, less chronic disability and less sickness absence (moderate evidence). There is no clear evidence on the optimum content or intensity of such packages but there is generally consistent evidence on certain basic elements. Such interventions are more effective in an occupational setting than in a health care setting. They should be designed to fit local circumstances and consist of a multidisciplinary package of interventions. A combination of optimum clinical management, a rehabilitation programme and organisational interventions designed to assist the worker to return to work is more effective than single elements alone (moderate evidence). Communication and collaboration with primary health care professionals and encouragement of self-management strategies remain important.
Tveito et al (2004) ⁴³	Of all the workplace-based interventions only exercise and the comprehensive multidisciplinary and treatment interventions have a documented effect on LBP. Interventions to treat employees with LBP: Moderate evidence of positive effect on sick leave (3/4 studies report significant effects); limited evidence for effect on new episodes of LBP (2/2 studies report significant effect); no robust evidence for effect on costs or pain levels. Multidisciplinary interventions (aimed at prevention): Limited evidence of effects on sickness leave and pain levels; no evidence for effect on costs or new episodes of LBP. Exercise interventions (aimed at prevention): Limited evidence for positive effect on sick leave and on new episodes of LBP and on costs. No evidence for effect on pain levels. Other prevention interventions: No evidence of effect on sick leave, pain levels or costs from educational interventions, back belts or pamphlets; only limited evidence for effect of educational interventions on new episodes of LBP.
WORK-RELATED LOW BACK PAIN (ALL TYPES) – Any Intervention	
Williams et al	Clinical interventions with occupational interventions, as well as early return to work/modified work interventions were effective in returning workers to work faster, reducing pain and

(2007) ⁴⁷	disability and decreasing the rate of back injuries. Ergonomic interventions were also effective workplace interventions.
SUB-ACUTE BACK PAIN – Any Intervention	
Pengel et al (2002) ³⁷	For the strict duration of sub-acute low back pain (6 weeks to 3 months), evidence was found (2 low quality studies) for the efficacy of advice c/w usual medical care for return to work rates at 3, 6, 12 months and 5 years. When a broader view of duration is used (7 days to 6 months), there is some evidence that other treatments may be effective - for example, manipulation (reduces pain and disability), TENS in combination with rehabilitation (improves return to work rate), exercise (reduces disability), coordination of primary health care (reduces disability) and wearing a corset (reduces disability). There is a major gap in the evidence for interventions for the treatment of sub acute low back pain.
Hlobil et al (2005) ²⁴	Return to work rates: Conclude: there is strong evidence for a beneficial effect of return to work interventions on return-to work rate (c/w usual care) at 6 months, but there is conflicting evidence for effectiveness of interventions on return to work rate at 12 months and longer follow-up periods. Days of sick leave: Conclude: There is strong evidence for effectiveness of interventions on reduction of number of sick days at 12 months and longer-term follow up (2 to 6 years), but there is conflicting evidence on the shorter-term effects (< 6 months). Pain and functional status: There is conflicting evidence on effects of interventions on functional status and pain at 6 months, 12 months and longer-term follow up. "Return to work interventions are equal or more effective regarding absence from work ... than usual care is" (for sub-acute LBP). "The optimal intervention is probably a mixture of exercise, education, behavioural treatment and ergonomic measures, but it is not clear which component or which combination of components is the most effective".
LUMBAR DISC SURGERY – Post-operative Rehabilitation	
Ostelo et al (2002) ³⁶	(a) There is no strong evidence for the effectiveness of any treatment starting immediately post-surgery, mainly because of lack of good quality studies. (b) For treatments that start 4-6 weeks post-surgery, there is strong evidence (on short-term follow up) that intensive exercise programmes are more effective than mild exercise programmes on functional status and faster return to work. On long-term follow-up, there is strong evidence that there is no difference between intensive and mild exercise programmes with regard to overall improvement. For all other outcome measures, there is conflicting evidence on the comparison of intensive and mild exercise programmes. (c) There is no strong evidence for the effectiveness of supervised training as compared to home exercises. (d) There is no strong evidence for the effectiveness of multidisciplinary rehabilitation as compared to usual care. (e) There is limited evidence that treatments in working populations that aim at return to work are more effective than usual care with regard to return to work. (f) There is limited evidence that low-tech and high-tech exercises, started more than 12 months post-surgery are more effective in improving functional status than physical agents, joint manipulation or no treatment. (g) There is no strong evidence for the effectiveness of any specific intervention when added to an exercise programme, regardless of whether the exercise programme starts immediately post-surgery or later.
LOW BACK PAIN (ALL TYPES) – Exercise Interventions	
van Tulder et al (2000) ⁴⁴	<i>For acute LBP:</i> Strong evidence that exercise therapy is not more effective than inactive or other active treatments. Flexion and extension exercises are not effective for acute LBP. <i>For chronic LBP:</i> Conflicting evidence on effectiveness of exercise therapy compared with inactive treatments. Exercise therapy was more effective than usual care by the general practitioner and just as effective as conventional physiotherapy. Unclear whether exercise therapy is more effective than inactive treatment for chronic LBP. Still unclear whether any specific types of exercise is more effective than others. Current consensus in chronic LBP is that management should be aimed at restoring normal function and behaviour and exercise should play a role in rehabilitation. Exercise may be helpful within a rehabilitation programme for patients with chronic LBP if they aim to increase return to normal daily activities and return to work.
Kool et al (2004) ²⁹	Exercise vs. usual care: 'strong evidence' that exercise (alone or as part of multidisciplinary treatment) reduces sick days for patients with non-acute non-specific LBP 1 year after treatment (SMD = -0.24, 95% CI = -0.11, -0.36). The effects are greater in more severely disabled patients (SMD = -0.30, 95%CI = -0.17, -0.42). Insufficient evidence for effects on sick leave after more than 1 year. No evidence for effect on number of persons receiving disability allowance at any follow up time up to 5 years. Exercise vs. other experimental treatments: Only 1 study showed significant sick leave related benefits; all others showed no difference. No evidence for superiority of exercise. No evidence in this review that early intervention is more effective.
Hayden et al (2005) ²²	Chronic back pain: evidence that exercise therapy is 'slightly effective' at decreasing pain (mean change -7.3 points; 95% CI: 3.7 to 10.0 points) and improving function (+2.5 points; 95% CI: 1.0 to 3.9 points) c/w comparison treatment groups at all follow-up periods, especially in health care populations (patients). Sub-acute LBP: some evidence that a graded-activity exercise programme is effective in occupational settings at improving absenteeism outcomes - but evidence for other types of exercise therapy in other populations is inconsistent. Acute LBP: exercise therapy and other programmes (including no treatment) were equally effective in terms of pain and functioning
LOW BACK PAIN (ALL TYPES) – Physical Conditioning Interventions	
Schonstein et al (2003) ^{38,39}	There is evidence that physical conditioning programmes that include a cognitive-behavioural approach can reduce the number of sick days lost at 12 months follow up by an average of 45 days, when compared to general practitioner usual care or advice for workers with chronic back pain. For work-related outcomes, there is little evidence for or against the efficacy of specific exercises that are not accompanied by a cognitive-behavioural approach in reducing sick days lost due to back pain for workers with either acute or chronic back

	<p>pain. Conclusions: Physical conditioning programmes that include a cognitive-behavioural approach plus intensive physical training (specific to the job or not) that includes aerobic capacity, muscle strength and endurance, and coordination; are in some way work-related; and are given and supervised by a physiotherapist or a multidisciplinary team, seem to be effective in reducing the number of sick days for some workers with chronic back pain, when compared to usual care. However, there is no evidence of their efficacy for acute back pain. Physical conditioning programmes (especially those that included a cognitive-behavioural approach and are work-related) reduced the number of sick days taken at 12 months follow up c/w usual care (by average of 45 days, 95% CI: 3-88 days). Little evidence of effect on sickness absence of specific exercise programmes that did not include a cognitive-behavioural component.</p>
LOW BACK PAIN (ALL TYPES) – Organisational Interventions	
<p>Maier (2000)³²</p>	<p>"At present the only workplace intervention with demonstrated efficacy in the prevention of LBP is exercise. Other common interventions have either been shown to be ineffective or have not been properly evaluated". Workplace exercise is effective; but braces and education are ineffective; and workplace modification plus education is of unknown value in preventing LBP. Exercise: Limited evidence that exercise reduces the prevalence of LBP. Moderate evidence that exercise reduces the severity of LBP. Moderate evidence that exercise reduces sick leave due to LBP. No evidence that exercise is cost-effective in preventing LBP. Lumbar braces: Strong evidence that braces are ineffective at reducing prevalence of LBP, sick leave due to LBP and severity of LBP. Limited evidence that they were ineffective in reducing costs of LBP. Education: Moderate evidence that education is ineffective in reducing the prevalence of LBP, leave due to LBP and severity of LBP. Limited evidence education is ineffective in reducing costs of work-related LBP. Workplace modification and education: No evidence for or against workplace modification and education.</p>
LOW BACK PAIN (ALL TYPES) – Educational Interventions	
<p>Heymans et al (2004)²³</p>	<p>Chronic and recurrent LBP: moderate evidence that back schools, (particularly those in an occupational setting, reduce pain and improve function and return-to-work status in the short and intermediate-term (compared to other treatments, such as exercises, manipulation, myofascial therapy, advice, placebo or waiting list controls).</p>

Notes: ^a Intervention complexity code:

- 1 = Predominantly complex or multidisciplinary interventions (i.e. comprising more than one component - any combination of physical, psychological, occupational, and/or educational elements);
- 2 = Predominantly simple interventions (single component only – e.g. exercise alone);
- 3 = Mix of complex and simple interventions

TABLE 1.2: SYSTEMATIC REVIEWS OF INTERVENTIONS FOR OTHER MUSCULOSKELETAL PROBLEMS

(a) CHARACTERISTICS						
Authors and Date	Population/ setting	Clinical condition(s)	Number and type of studies included	Type, intensity and duration of intervention(s) reviewed and/or skill mix involved	Intervention complexity ^a	Outcome measures
VARIOUS MUSCULOSKELETAL DISORDERS – Multidisciplinary rehabilitation						
Waddell & Burton (2004) ⁶	<i>Not described</i>	Other musculoskeletal conditions	Review of systematic and other reviews	Varied – health care interventions; pain management (including cognitive behavioural aspects); biopsychosocial rehabilitation; vocational rehabilitation; ergonomic/workplace interventions.	1	Broadly falling into two groups, i.e. Work-related: job retention, return to work. Clinical: Pain; psychological symptoms
Meijer et al (2005) ³³	Adults (18-65 years) who were sick-listed before treatment due to musculoskeletal complaints. Settings: unclear.	Musculoskeletal complaints - including neck/shoulder pain, back pain, generalised pain/ fibromyalgia	18 RCTs and CCTs	Return-to-work treatment programmes (review focusing on the composition of programmes as well as effectiveness).	1	Work-related: Return to work (after 12 months), number of mean sick leave days or % returned to work (fully)
MacEachen et al (2006) ³¹	Various settings – employers and workers from healthcare, insurance, union, occupational health, government department settings	Musculoskeletal and pain-related injuries	Systematic review of qualitative literature	<i>Not applicable</i> – includes only qualitative studies focusing on the return to work process	-	<i>Not described</i>
FIBROMYALGIA OR WIDESPREAD PAIN – Multidisciplinary Rehabilitation						
Karjalainen et al (1999) ²⁵	Adults of working age (18-65 years) from outpatient, occupational health or primary care clinics. Settings: Where reported, appear to be outpatient programmes	Fibromyalgia and non-malignant widespread musculoskeletal pain	7 RCTs	Multidisciplinary inpatient or outpatient rehabilitation programmes. Programmes had to consist of a physician's consultation plus a psychological, social or vocational intervention - or a combination of these – to be included in the review.	1	Work-related: Return to work/work status; work capacity and occupational status Clinical: Pain intensity; generic functional status; tenderness; various other measures of pain behaviour and coping; physical fitness. Other: Quality of life; medication use; various psychological symptoms; costs (direct and indirect).

NECK AND SHOULDER PAIN – Multidisciplinary Rehabilitation						
Karjalainen et al (2003) ²⁸	Working age males and females (age 18-59 years). One study had mostly blue-collar workers in intervention group, recruited from industrial health care units. Other study intervention delivered in an inpatient setting.	Neck and shoulder pain	2 studies – 1 RCT and 1 CCT	Inpatient or outpatient rehabilitation programmes of a multidisciplinary nature - i.e. it had to consist of a physician's consultation, plus either a psychological, social or vocational intervention, or a combination of these. Rehabilitation that was predominantly medical (e.g. medical treatment and physiotherapy) and trials of neck schools were excluded.	1	Work-related: Ability to work (number of days on sick leave/year); Ability to work (days off in 6 months); Number of people back to work at 3 months. Clinical: Pain intensity; generic functional status; disorder specific functional status; prevalence of symptoms. Other: Costs per patient.
UPPER LIMB REPETITIVE STRAIN INJURY – Multidisciplinary Rehabilitation						
Karjalainen et al (2000) ²⁶	Working age adults (age 18-65) with recent diagnosis (symptoms <8 weeks) or chronic pain	Upper limb repetitive strain injuries	2 RCTs	Biopsychosocial rehabilitation programme (inpatient or outpatient) - had to consist of physician consultation plus either a psychological, social or vocational intervention, or a combination of these.	1	Work-related: None. Clinical: Pain intensity; pain beliefs; generic functional status; depression. Other: Healthcare consumption; costs (medication use).
ARM, NECK AND SHOULDER INJURIES – Any intervention						
Verhagen et al (2006) ⁴⁵	Adults with various injuries - including neck, shoulder, upper extremity, carpal tunnel/ tendonitis, hand and wrist problems of various durations (from >2 weeks, to >12 months). Injuries may or may not be work-related. Settings: not clear.	Arm, neck or shoulder complaints	21 RCTs and non-RCTs	'Conservative interventions' for upper extremity disorders. Interventions were grouped into 5 categories: (a) exercises (most common); (b) ergonomics; (c) massage; (d) manual therapy/chiropractic treatment; (e) energised splints. NB: trials of biopsychosocial rehabilitation programmes were excluded (to avoid overlap with previous Cochrane Reviews).	3	Work-related: Sick leave, return to work, work ability Clinical: Pain, disability, fatigue/tiredness, discomfort, strain, symptom-free, strength, function, depression. Other: 'Improvement', well-being, perceived recovery, 'benefit'.
SHOULDER INJURIES – Any intervention						
Faber et al (2006) ¹⁹	Males and females. Mean ages reported - ranging 43 to 63 years. Settings: Not clear	Impingement syndrome or rotator cuff tear (shoulder injury)	18 clinical trials or controlled studies	Any treatment for impingement syndrome measuring the improvement in functional limitation and concomitant duration of sick leave.	2	Work-related: Return to work - mean sick leave (in weeks, in days); absent from work; able to work Clinical: Functional limitations - various measures

VARIOUS MUSCULOSKELETAL DISORDERS – Occupational Interventions						
Frache et al (2005) ²⁰	Workers from USA, Sweden, Canada, Finland, and Netherlands – majority were compensation claimants. Settings: workplace based interventions	Musculoskeletal or other pain-related conditions - e.g. carpal tunnel surgery, neck, shoulder, back, joint disorders, upper and lower extremity injuries)	10 RCTs, non-RCTs, prospective cohort, and cross-sectional studies	Workplace based return-to-work interventions: Review focused on 6 recognised RTW intervention components, offered in various combinations: (a) early contact with worker by the workplace; (b) work accommodation offer; (c) contact between healthcare provider and workplace; (d) ergonomic work site visits; (e) supernumerary replacements; (f) RTW coordination. NB: Healthcare and other clinical interventions were not included unless initiated by the workplace and provided by health professionals integrated into the workplace (e.g. occupational health physicians).	2	Work-related: Work disability duration - assessed from administrative database or self-report (time on benefits; time absent from work). Clinical: General health, condition-specific functional status, symptom severity, pain levels. All measured via self-report instruments Other: Quality of life; various costs/economic analyses.
KNEE INJURIES – Exercise Interventions						
Trees et al (2005) ⁴⁰	Adults - age 16 and above. Settings: Hospital-based clinics; University-based; US Navy Medical Centre; Sports Medicine Centre; Physical therapy centre	Anterior cruciate ligament (ACL) injuries	9 RCTs and quasi-randomised trials	Exercise interventions - various types: some for conservative management of ACL; others for post-operative management of ACL.	2	Work-related: Return to work or return to pre-injury level of activity. Clinical: Pain; knee instability; swelling; range of movement; muscle strength; muscle activation; other complications.
Trees et al (2007) ⁴¹	Adults with ACL injuries and ligament and meniscal damage. Settings: Rehabilitation centres; outpatient clinics in USA, Australia, Germany, UK, Sweden	Anterior cruciate ligament (ACL) injuries in combination with collateral ligament and meniscal damage of the knee	5 RCTs and quasi-randomised trials	Exercise - single exercise interventions and multiple-exercise interventions; as part of conservative management or following surgical reconstruction. To be included, had to include one of following formats - (a) muscle strengthening; (b) joint mobility; (c) gait re-education; (d) neuromuscular function/balance and proprioception; (e) land-based/water based.	2	Work-related: Returning to work (at 6 months and 12 months) Clinical: Returning to pre-injury level of activity; pain; instability; swelling; range of motion; muscle strength; muscle activation; re-rupture or re-injury; other complications Other: Compliance.

(b) DESCRIPTION OF INTERVENTIONS		
Authors and Date	Range of components included across studies	Intensity, duration and timing
VARIOUS MUSCULOSKELETAL DISORDERS – Multidisciplinary Rehabilitation		
Waddell & Burton (2004) ⁶	<i>Individual interventions not described</i>	<i>Not described</i>
Meijer et al (2005) ³³	Physical (included in 77% studies): Physical conditioning included in 6 effective programmes (content not specified) Psychological (included in 55% studies): 'Psychological conditioning' included in 5 effective programmes. Relaxation also used in over half of effective programmes (45% studies). Occupational (included in 68% studies) or social (in 32% studies): 'Work conditioning' included in 6 effective programmes Educational (included in 77% studies): 'Knowledge conditioning' (education or information about pain and human anatomy) - included in 6 effective programmes.	Not clearly described
MacEachen et al (2006) ³¹	<i>Not applicable</i> – qualitative studies of return to work process	<i>Not applicable</i>
FIBROMYALGIA OR WIDESPREAD PAIN – Multidisciplinary Rehabilitation		
Karjalainen et al (1999) ²⁵	Physical: Physician input; physical training Psychological: Behavioural therapy (education, relaxation, goal setting, support person); cognitive treatments in group sessions; stress management programme; applied relaxation with operant conditioning; behavioural therapy with progressive muscle relaxation Occupational or social: 1 study included a vocational counsellor on the team: input not specified Educational: Education - incorporated in 3 studies but content only specified in 1 study as including information on psychosocial factors, ergonomics, and exercise. Unspecified: 1 study with multidisciplinary programme involving input from doctor, nurse, physiotherapist, psychologist, social worker, occupational therapist, vocational counsellor (but specific interventions not documented).	Varied - (i) Education + physical training: 6 weeks self-management course and 6 hours physical training; (ii) Behavioural therapy: 10 week outpatient rehabilitation of 90 minutes per week; (iii) Education + cognitive intervention: 6 week outpatient programme of 12 x 2 hour group sessions; (iv) Stress management: 90 minute sessions - twice a week for 6 weeks, then weekly for 8 weeks; (v) Multidisciplinary rehabilitation programme: duration individually regulated; (vi) Applied relaxation + operant conditioning: 4 days per week for 4 weeks; (vii) Behavioural therapy + relaxation: 2 hours per week for 4 weeks.
NECK AND SHOULDER PAIN – Multidisciplinary Rehabilitation		
Karjalainen et al (2003) ²⁸	Physical: Physician input (both studies); physical training (1 study) Psychological: CBT intervention delivered directly by clinical psychologist (1 study) Occupational or social: Social interaction and workplace visit (1 study) Educational: Information, education - not specified (1 study)	Study 1: Eight week programme of 2 hours a day, 4 days a week. Study 2: Five week inpatient multimodal programme - intensity not specified
UPPER LIMB REPETITIVE STRAIN INJURY – Multidisciplinary Rehabilitation		
Karjalainen et al (2000) ²⁶	Physical: Medication; referral to physiotherapist Psychological: Relaxation training; hypnosis; modified biofeedback; autogenics; progressive muscle relaxation; imagery techniques Occupational or social: Ergonomic evaluation	Not clearly described

ARM, NECK AND SHOULDER INJURIES – Any Intervention		
Verhagen et al (2006) ⁴⁵	<p>Physical: Exercise therapies (including manual physical therapy, exercise, active/dynamic exercises, endurance training, physical training course, individualised physical therapy, group physical therapy exercises, dynamic muscle training, proprioceptive neuromuscular facilitation, Feldenkreis therapy); Ultrasound; Massage; Spinal manipulation; Energised splints.</p> <p>Psychological: Relaxation training, 'body awareness' therapy</p> <p>Occupational or social: Ergonomic changes; intensive ergonomics (physiotherapist changed worksite according to checklist); keyboard changes; regular breaks; breaks plus exercises at beginning of breaks</p> <p>Educational: Neck school (advice and exercises); one-off training session in ergonomics; education and exercises; ergonomic instructions.</p>	Intensity ranged from 1-3 sessions per week. Duration ranged from 3 weeks to 16 weeks. Some one-off educational training elements.
SHOULDER INJURIES – Any Intervention		
Faber et al (2006) ¹⁹	<p>Physical: Medication - steroid injections. Physical therapy - including extracorporeal shock-wave therapy, ultrasound, laser, supervised exercise therapy, and/or manual therapy, home exercise therapy. Post-operative rehabilitation interventions comprised different forms of exercise therapy: supervised exercise therapy, self-training with instruction from physiotherapist, passive continuous motion. Surgical techniques.</p>	Not clearly described
VARIOUS MUSCULOSKELETAL DISORDERS – Occupational Interventions		
Franché et al (2005) ²⁰	<p>Physical: Assessment and consultation with physician; usual care from general practitioner; early assessment/treatment by physiotherapist</p> <p>Psychological: CBT intervention at back clinic</p> <p>Occupational or social: (a) work accommodation offers; (b) ergonomic work site visits - various disciplines involved (occupational therapists, ergonomists, physiotherapists); variation in timing of visit (e.g. within first week of work absence, after 6 weeks of absence; variation in number and role of people involved and intensity of follow up; (c) supernumerary replacements.</p> <p>Communication or coordination: (a) early contact with worker by workplace - i.e. occurring within first 3 months of onset of disability, in some cases within first week; variability in the person initiating the contact (b) contact between healthcare provider and workplace - varied from simple report sent to workplace to more extensive visit to workplace by healthcare provider; (c) return to work coordination - variation in professional background of coordinator and whether coordinator should be a third-party (offering more neutrality and perceived higher level of confidentiality) or in-house (who is more familiar with workplace culture and daily aspects of work conditions).</p>	Not clearly described
KNEE INJURIES – Exercise Interventions		
Trees et al (2005) ⁴⁰	<p>Physical: Various exercise interventions - including muscle strengthening, joint mobility, gait re-education, neuromuscular function. Usually involved attendance at physiotherapy department with home exercise programme. Some in group/class settings. Some working more intensively with therapists; others working at home with fewer clinic visits. Some programmes involved land-based/gym-based and some pool-based exercises.</p> <p>Educational: One study reported pre-operative education (content not specified)</p>	Some commenced as early as 3 weeks post-operatively. Intensity varied from once to three times weekly. Duration of supervised sessions varied from 1 hour sessions (plus home exercise programme). Rehabilitation period ranged up to 24 sessions.
Trees et al (2007) ⁴¹	<p>Physical: Exercise programmes included: attendance at rehabilitation centre under supervision of physical therapist and home exercise programme - range of leg muscle exercises plus cycling, swimming, jumping, jogging; proprioceptive and balance exercises (progressive, using wobble boards, mini trampolines and exercise balls), traditional strengthening exercises (supervised by physiotherapist + home exercises); outpatient physiotherapy plus fitness centre training (including static cycling, stretching and strength training); range of 'core' exercises (cycling, stretching, soft tissue mobilisation, proprioceptive exercise, hops, resistance exercises, ice) plus either CKC resistance exercises using leg press machine or OKC exercises using ankle weights; quadriceps exercises; supervised training group plus home exercises.</p>	Varied in intensity from 2-3 supervised sessions a week to daily (self-supervised?). Session length not always reported; some lasted 40 minutes to 60 minutes. Duration of intervention varied from 6 weeks to 32 weeks or until first outpatient appointment. One study compared 'accelerated' (early start) to 'non-accelerated' programme.

(c) MAIN FINDINGS	
Authors and Date	Authors' findings and conclusions
VARIOUS MUSCULOSKELETAL DISORDERS – Multidisciplinary Rehabilitation	
Waddell & Burton (2004) ⁶	General consensus that a multidisciplinary approach with all the key players onside is most appropriate. Evidence available is consistent with that for low back pain and supports a biopsychosocial approach. Universal agreement on the need for further high quality research on the optimum nature and content of effective biopsychosocial interventions for musculoskeletal problems.
Meijer et al (2005) ³³	"The evidence is inconsistent regarding the effectiveness of treatment programmes on return to work in sick-listed patients with non-specific musculoskeletal disorders". 7/22 studies did show a positive effect on RTW but 12/22 high quality studies showed no effect on RTW. 3/22 studies reported no overall treatment effect on RTW (only positive effects in certain sub-groups of patients and no effect in other sub-groups). None of the studies reported any negative effects on RTW. "A combination of knowledge, psychological, physical and work conditioning - possibly supplemented with relaxation exercises - appears to be essential to the success of return to work treatment programmes".
MacEachen et al (2006) ³¹	Three main findings: (a) scope and complexity of work-based return to work processes - involves many players and dimensions that interact with each other to support or undermine the possibility of return to work. Successful outcomes require active planning and sensitivity to the complexity of the process. (b) Goodwill and trust are central to the return to work arrangements. There is potential for conflict and a considerate understanding of mutual needs is important. There is a need for creativity and good teamwork in return to work. (c) Role of social and communication barriers and needs in the return to work process: because of the differing players, there is a built-in challenge for communication and co-ordination. Two intermediary players (health professional, workplace supervisor) could play a key role in the return to work process. An intermediary health professional can play an important role in the facilitation and moderation of return-to-work communication - they can visit the workplace, gain a closer understanding of the needs of the injured worker and liaise between the physician and the employer. Workplace supervisors can help sustain positive social relations between the injured worker and their co-workers, maintain accommodation of the physical work environment and provide a link between the worker and senior management
FIBROMYALGIA OR WIDESPREAD PAIN – Multidisciplinary Rehabilitation	
Karjalainen et al (1999) ²⁵	There appears to be little scientific evidence for the effectiveness of multidisciplinary rehabilitation for fibromyalgia and widespread musculoskeletal pain - it was difficult to draw conclusions and make any clinical recommendations because of the heterogeneity and generally poor quality of existing studies. No robust evidence of efficacy was observed. However, behavioural treatments and stress management appear to be important components of interventions. Education combined with physical training showed some positive effects in long-term follow up.
NECK AND SHOULDER PAIN – Multidisciplinary Rehabilitation	
Karjalainen et al (2003) ²⁸	The review identified only two relevant studies - one was a low quality RCT and the other a low quality CCT. The clinical relevance of the studies was satisfactory. Study 1 found no difference in effects between the multidisciplinary rehabilitation programme and usual care at 1 year or 2 year follow up. Study 2 found no difference in effects between the two groups on any measure, except costs; the intervention, administered directly by a clinical psychologist, was less cost-effective than the control intervention (where the psychologist advised/supervised the rehabilitation team). There appears to be little scientific evidence for the effectiveness of multidisciplinary biopsychosocial rehabilitation compared with other rehabilitation facilities for neck and shoulder pain. Based on 1 low quality RCT, there is limited support for the role of a psychologist as an adviser to other health professionals in a multidisciplinary team (compared to a psychologist giving direct care to the patient). Multidisciplinary rehabilitation is a commonly used intervention for chronic neck and shoulder complaints, therefore there is an urgent need for high quality trials in this field.
UPPER LIMB REPETITIVE STRAIN INJURY – Multidisciplinary Rehabilitation	
Karjalainen et al (2000) ²⁶	Little evidence for effectiveness of biopsychosocial rehabilitation on repetitive strain injuries. Lack of RCTs on more intensive and comprehensive rehabilitation programmes. No studies compared biopsychosocial programmes with non-biopsychosocial programmes.
ARM, NECK AND SHOULDER INJURIES – Any Intervention	
Verhagen et al (2006) ⁴⁵	No strong evidence exists for the effectiveness of any treatment. There is limited evidence about the effectiveness of exercises when compared to other treatments (e.g. massage). There is conflicting evidence on the efficacy of exercise over no treatment or as an add-on treatment. No differences were found between different types of exercise. There is conflicting evidence about the effectiveness of ergonomic programmes over no treatment - benefit not yet clearly demonstrated. There is limited evidence for adding breaks during computer work, for massage as an add-on treatment on manual therapy or exercise or for some keyboard designs for carpal tunnel syndrome

SHOULDER INJURIES – Any Intervention	
Faber et al (2006) ¹⁹	There is no sound evidence indicating the best treatment for patients with impingement syndrome. Functional limitations and return to work are seldom used as outcome measures, even though pain, functional disability and ability to work do not improve in the same way. There is moderate evidence that exercise combined with manual therapy is more effective than exercise alone. There is limited evidence for the effectiveness of the following interventions: exercise is more effective than no intervention (on functional limitations); oral diclofenac is more effective than analgesic injections (on functional limitations and on ability to work after 1 year). There is strong evidence that extracorporeal shock-wave therapy is not effective and moderate evidence that ultrasound is not effective. In the short term, arthroscopic acromioplasty is more effective than open acromioplasty (on functional limitations and return to work); but in the long term, there is moderate evidence that open and arthroscopic acromioplasty are equally effective (on functional limitations). For all other interventions, there is only limited evidence that the interventions do not differ in their effect on the improvement in functional limitations.
VARIOUS MUSCULOSKELETAL DISORDERS – Occupational Interventions	
Franche et al (2005) ²⁰	Return to work interventions can reduce work disability duration and associated costs. Strong evidence that work disability is reduced by work accommodation offers and contact between healthcare provider and the workplace. Moderate evidence that it is reduced by interventions which include early contact between worker and workplace, ergonomic work site visits and presence of a RTW coordinator. Moderate evidence that the above 5 interventions reduce costs associated with work disability duration. Insufficient or limited evidence for sustainability of these effects beyond 1 year. Insufficient or mixed evidence for effect of interventions on quality of life. With regard to timing of contact between worker and workplace, still questions about when and by whom contact should be made. With regard to best practice for contact between healthcare providers and workplace, nature and timing of contact is unclear.
KNEE INJURIES – Exercise Interventions	
Trees et al (2005) ⁴⁰	Lack of evidence to support the use of one form of exercise intervention against another in the management of ACL injuries. Results of long-term effects of exercise are not available due to inadequate length of follow up in trials.
Trees et al (2007) ⁴¹	Insufficient evidence was found to support the efficacy of one exercise intervention over another. Sub-group analyses: effectiveness of exercise interventions does not depend on gender, age, setting, frequency or intensity, timing of surgery.

Notes: ^a Intervention complexity code:

- 1 = Predominantly complex or multidisciplinary interventions (i.e. comprising more than one component - any combination of physical, psychological, occupational, and/or educational elements);
- 2 = Predominantly simple interventions (single component only – e.g. exercise alone);
- 3 = Mix of complex and simple interventions

TABLE 1.3: SYSTEMATIC REVIEWS OF INTERVENTIONS FOR MENTAL HEALTH PROBLEMS AND STRESS

(a) CHARACTERISTICS						
Authors and Date	Population/ setting	Clinical condition(s)	Number and type of studies included	Type, intensity and duration of intervention(s) reviewed and/or skill mix involved	Intervention complexity ^a	Outcome measures
MENTAL HEALTH CONDITIONS						
Waddell & Burton (2004) ⁶	<i>Not described</i>	Mental health conditions – severe mental illness and common mental health problems	<i>Review of systematic and other reviews</i>	Rehabilitation and return to work initiatives for severe mental illness. Cognitive behavioural therapy; graded exercise; organisational interventions for common mental health problems	1	<i>Not described</i>
COMMON MENTAL HEALTH PROBLEMS – e.g. depression, anxiety						
Seymour & Grove (2005) ⁴⁸	Not described in terms of gender, age, and ethnicity. Employees from NHS, local authorities/city councils, managerial or professional workers, white-collar workers. Recruited via local general practitioners, psychiatrists, psychological clinics, self-referrals or via occupational health departments or workplace.	Common mental health problems – e.g. depression, anxiety, work-related distress, adjustment disorder, stress-related problems, psychological distress	10 papers using a mix of designs: 1 meta-analysis; 4 RCTs; 2 cohort studies; 1 randomised trial with crossover; 1 quasi-experimental controlled study and 1 pilot study.	Rehabilitation or return to work programmes for employees who have had periods of mental ill health related sickness absence - aiming to prevent further problems or reduce the severity or longevity of symptoms of common mental health problems.	3	Work-related: Days at work; absenteeism; sickness duration and return to work rates. Clinical: Various measures of psychological symptoms and resources; physiology measures, stress/burnout, symptom intensity. Other: Quality of work life
SEVERE MENTAL ILLNESS – e.g. schizophrenia						
Crowther et al (2001) ¹⁵	Males and females with severe mental illnesses, particularly schizophrenia (or a related disorder). Mean age ranged from 19 years up to 41 years. People from ethnic minorities were well represented. Setting: Some inpatient; some outpatient or community based programmes	Severe mental illness	18 RCTs	Three types of intervention defined: (a) Pre-vocational Training (n=8) – a rehabilitation approach where participants undertake a period of preparation before being encouraged to seek competitive work - e.g. working in a sheltered environment or some form of pre-employment training or transitional employment. (b) Supported Employment (n=6) – e.g. 'Individual Placement and Support' - a rehabilitation approach where clients are placed immediately into competitive employment with ongoing support after only a brief period of preparation lasting less than 1 month.	1	Work-related: Number of clients in competitive employment (primary outcome); various other employment measures (e.g. hours worked, monthly earnings) Clinical: Numbers admitted to hospital or living in community at end of study; psychiatric symptoms; social functioning. Other: Compliance; quality of life; costs (programme and healthcare).

				(c) Modifications of vocational rehabilitation programmes (n=4) – pre-vocational training or supported employment that has been enhanced by some technique to increase the participants' motivation - e.g. payments or psychological intervention.		
STRESS AND PSYCHOLOGICAL ILL-HEALTH						
Edwards & Burnard (2003) ¹⁷	Mental health nurses in the UK, USA or Netherlands - working in community, forensic or ward-based teams	Work-related stress	8 intervention studies (designs not clear)	Stress management interventions, typically involving organisational or work environment change or training in self-management techniques	2	Work-related: Burnout rate; absenteeism. Other: Stressors; moderators; General Health Questionnaire (GHQ-28); psychological distress; burnout
Michie & Williams (2003) ³⁴	Employees from insurance, residential care, fire service, hospital ward, local government settings in Norway, USA, Sweden and United Kingdom. Settings: unclear – possibly workplace based.	Psychological ill health	6 RCTs, randomised uncontrolled, matched controlled and observational studies	Interventions which have been successfully implemented to prevent or reduce psychological ill health and sickness absence.	2	Work-related: Duration of sickness absence (weeks); Sick leave (in hours) in 6 month period (pre vs post intervention). Clinical: Anxiety; depression; health complaints; psychological strain; burnout; stress hormone (prolactin) levels.
(b) DESCRIPTION OF INTERVENTIONS						
Authors and Date	Range of components included across studies				Intensity, duration and timing	
MENTAL HEALTH CONDITIONS						
Waddell & Burton (2004) ⁶	<i>Individual interventions not described</i>				<i>Not described</i>	
COMMON MENTAL HEALTH PROBLEMS – e.g. depression, anxiety						
Seymour & Grove (2005) ⁴⁸	<p>Physical: 'Conventional care' - medication and 'other care'. Medication review by nurses. Consultation with occupational physician.</p> <p>Psychological: Cognitive behavioural therapy (delivered by therapist or by computerised programme); exploratory/relationship-oriented therapy (by therapist); counselling (CBT and psychodynamic therapy); improved access to psychotherapy; relaxation techniques; brief therapy model (CBT or relationship focused).</p> <p>Occupational or social: 'Organisation-focused interventions' (content not specified); supervisory support.</p> <p>Educational: Training of health professionals in primary care clinics - quality improvement interventions (medication review, access to psychotherapy); training of primary care doctors to recognise and treat anxiety. Employee training - development and implementation of problem-solving strategies for working life problems.</p>			Specified for psychological interventions only: CBT and exploratory therapy (8 sessions of each type) delivered by same therapist. CBT interactive computerised programme ('Beating the Blues') - 8 weeks; Counselling - 3 x 1 hour appointments - weekly for first 2 appointments and 1 appointment 3 months later. Brief therapy (CBT or relationship oriented) - 2 x 1 hour sessions one week apart, followed by a third sessions 3 months later.		

SEVERE MENTAL ILLNESS – e.g. schizophrenia		
Crowther et al (2001) ¹⁵	<p>Physical: Usual care from and consultations with psychiatrist and community, day hospital or ward mental health teams</p> <p>Psychological: Counselling, social learning techniques, positive reinforcement of progress, group work, support groups</p> <p>Occupational or social: Social activities, individual and group work assignments, tours of local industrial facilities, sheltered workshops, 'work crews', transitional employment, supported employment, real job placement (usually paid work) with supervision from employment support worker/vocational specialist or regular employees. Some programmes offered supported accommodation and help with transportation. Some teams had 'employment specialists' or 'job coaches' who helped identify suitable job opportunities, liaise with employers, help patients find employment, develop their CV and interview skills, assessed patient's suitability for jobs, offered support to patients whilst in employment, liaised with clinicians, etc</p> <p>Educational: Prevocational 'work-readiness' training and workshops; on the job training; educational programmes</p> <p>Communication or coordination: In some programmes, employment coordinators/support staff liaised with patient, employers and clinicians (e.g. integrated in community team). Most programmes had a member of staff who liaised with workplace and mental health team.</p>	Duration not always described. Intensity not always clear. Programmes with dedicated vocational specialists or employment coordinators often worked intensively with small numbers of clients
STRESS AND PSYCHOLOGICAL ILL-HEALTH		
Edwards & Burnard (2003) ¹⁷	<p>Psychological: Training in behavioural techniques, training in relaxation techniques (Jacobsen's progressive muscle relaxation, meditation, biofeedback, autogenics, self-hypnosis); training in therapeutic skills (Egan's 3 stage model of counselling - used in peer forum group)</p> <p>Occupational or social: Social support based programme - identifying individuals who provide social support and drawing up social support network. Attending casework discussion group. Change to primary nursing model of care (named nurse, patient-focused); 'creative accommodation' (expansion of activities to help meet patient and organisational needs whilst providing staff with increased sense of accomplishment and enhanced professional esteem)</p> <p>Educational: Stress management workshops (covering: concepts of stress and burnout, principles of stress management, group discussions, impact of life events and stress); training in psychosocial interventions (to help nurses work with patients within a more empathic framework and equip with skills to intervene effectively); assertiveness training with behavioural rehearsal in group setting.</p>	Range from 4 to 15 sessions, lasting from 1 hour to 1 day and occurring daily or weekly for variable periods of time.
Michie & Williams (2003) ³⁴	<p>Physical: Aerobic exercise – 1 study.</p> <p>Psychological: Support, advice and feedback from psychologist - teaching skills of stress management and how to participate in and control their work (as part of stress management training sessions) during period of organisational change – 1 study</p> <p>Occupational or social: Early referral to Occupational Health (triggered after 2-3 months absence, rather than standard 6 months) – 1 study</p> <p>Educational: Stress management training (2 studies - content not specified in 1 study); Skills training (in groups) - to mobilise social support at work and enhance problem solving (and to train others in the workplace) - 1 study; Communication training in groups (verbal and non-verbal communication and empathy skills - included information, videos, modelling and role playing) - 1 study; Psycho-educational programme in groups (underwent 1 of 7 programmes, emphasising one or more aspect of stress management - physiological processes, coping with people, interpersonal awareness processes) - 1 study</p>	Varied - Aerobic exercise (6 sessions per week for 10 weeks). Stress management training (3 session per week for 10 weeks; or 20 weekly 1 hour sessions); skills training (6 x 4-5 hour sessions over 9 weeks); psycho educational programmes (42 weeks of 7 programmes, lasting 6 weeks each); communications training (4 weekly 8 hour sessions).

(c) MAIN FINDINGS	
Authors and Date	Authors' findings and conclusions
MENTAL HEALTH CONDITIONS	
Waddell & Burton (2004) ⁶	Widely agreed in principle that mental health rehabilitation should be based on a biopsychosocial approach. Many programmes for severe mental health problems consist of a combination of standard health care and a strong occupational element (i.e. biosocial or focused on a social model of disability) but may ignore personal/psychological issues and person-environment interactions.
COMMON MENTAL HEALTH PROBLEMS – e.g. depression, anxiety	
Seymour & Grove (2005) ⁴⁸	The biopsychosocial model of (ill) health is helpful in understanding the complex interactions between the individual's mental health, attitudes to work and their social environment and focuses attention on the barriers to normal recovery and return to work. For employees with common mental health problems: There is strong evidence that CBT interventions are effective for employees with common mental health problems and they are more effective than other intervention types. CBT interventions were significantly more effective than relaxation techniques. Shorter programmes (<8 weeks) were more effective than programmes of longer duration. Effect particularly seen in employees with high-control roles. For employees in low-control roles, priority on increasing potential for enhanced control combined with CBT interventions. For employees with job-related distress: There is moderate evidence that brief therapeutic interventions (such as individual counselling) are effective for employees with job-related or psychological distress. Prescriptive therapy (offering problem identification and solving approaches) was more effective than exploratory therapy (focusing on the nature of interpersonal relationships). Individually focused interventions were preferable to organisational ones that aim to increase participation and autonomy of employees. For employees with mental health-related absenteeism: There is strong evidence that CBT is effective. Both studies described interventions using problem-solving strategies (either face to face or via computer-based software). Role of key players: Limited evidence for efficacy of supervisor support. Role of Primary Care: Moderate evidence that skilling primary care physicians to diagnose and treat depression (especially including medication follow up or provision of psychotherapy) is effective in helping people stay at work. Conclusions: For people already experiencing common mental health problems at work, the most effective approach is brief (up to 8 weeks) individual therapy, especially cognitive behavioural in nature (CBT). The intervention seems to be effective whether delivered face to face or via computer-aided software - especially for those in high-control roles. Professionals such as occupational physicians, primary care practitioners and workplace supervisors all have key roles to play in the rehabilitation of employees but they need to collaborate actively to give the employee the best possible opportunity of rehabilitation. Some evidence that early interventions are effective - e.g. 4-5 sessions of CBT to increase activity and coping skills for those off sick for 2 weeks (1 study - Van der Klink et al, 2003).
SEVERE MENTAL ILLNESS – e.g. schizophrenia	
Crowther et al (2001) ¹⁵	The main finding was that on the primary outcome (number in competitive employment) Supported Employment was significantly more effective than Pre-vocational Training. For example, at 18 months, 34% of people in Supported Employment were employed vs. 12% in Vocational Training (RR random effects (unemployment) 0.76; 95% CI 0.64 to 0.89, NNT 4.5). Clients in Supported Employment also earned more and worked more hours per month than those in Pre-vocational Training. There was no evidence that Pre-vocational Training was more effective than standard community care in helping clients to obtain competitive employment. Conclusions: Supported Employment is more effective than Pre-vocational Training in helping severely mentally ill people to obtain competitive employment. There is no clear evidence that Pre-vocational Training is effective.
STRESS AND PSYCHOLOGICAL ILL-HEALTH	
Edwards & Burnard (2003) ¹⁷	A great deal is known about the sources of stress at work, how to measure it and its impact on a range of outcome indicators. However, there is a general lack of research evidence on interventions that prevent or minimise/eliminate stress and burnout - due to heterogeneity of studies and fact that majority of interventions focus predominantly on individual strategies. Very few tackle problems at several levels (education; reducing/eliminating workplace stressors/adjusting organisational environment/management strategies as well as enhancing individual coping strategies). Little is known about which specific interventions or techniques are most effective.
Michie & Williams (2003) ³⁴	For the 2 studies with work-related outcomes - interventions were (a) early referral to Occupational Health and (b) communication training. (a) Early referral to OH resulted in reduction of sickness duration from 40 weeks to 25 weeks before return to work (but no statistical tests were reported). (b) Communications training - showed reduction in staff resignations and sick leave (but no statistical tests were reported). Other studies using educational interventions and aerobic exercise showed significant reductions in clinically-relevant outcomes (anxiety, depression, stress hormone, health complaints) c/w control groups but did not report work-related outcomes. Conclusions: "Successful interventions that improved psychological health and levels of sickness absence used training and organisational approaches to increase participation in decision making and problem solving, increase support and feedback and improve communication" ... Many of the work-related variables associated with high levels of psychological ill health are potentially amenable to change ...

More evaluations of interventions are required, based on randomised or longitudinal research designs ... Interventions for which evidence of effectiveness exists should be piloted and evaluated across different work settings". Key work factors associated with psychological ill health and sickness absence are: long working hours, work overload and pressure and the effects of these on personal lives, lack of control over work, lack of participation in decision making, poor social support and unclear management and work role. Some evidence sickness absence may also be associated with poor management style.
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Notes: ^a Intervention complexity code:

1 = Predominantly complex or multidisciplinary interventions (i.e. comprising more than one component - any combination of physical, psychological, occupational, and/or educational elements);

2 = Predominantly simple interventions (single component only – e.g. exercise alone);

3 = Mix of complex and simple interventions

TABLE 1.4: SYSTEMATIC REVIEWS OF INTERVENTIONS FOR CARDIO-RESPIRATORY PROBLEMS

(a) CHARACTERISTICS						
Authors and Date	Population/ setting	Clinical condition(s)	Number and type of studies included	Type, intensity and duration of intervention(s) reviewed and/or skill mix involved	Intervention complexity ^a	Outcome measures
CARDIO-RESPIRATORY CONDITIONS						
Waddell & Burton (2004) ⁶	<i>Not described</i>	Cardio-respiratory conditions	Review of systematic and other reviews	Cardiac rehabilitation; exercise; psychosocial interventions; vocational advice; self-management education; lifestyle advice/education	1	<i>Not described</i>
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)						
Monninkhof et al (2002) ³⁵	Patients (males and females) with clinical diagnosis of COPD. Mean ages ranging 57 to 69 years. Most studies recruited from outpatient clinics; others from general practice, community or mixed settings	Chronic Obstructive Pulmonary Disease (COPD)	8 RCTs or CCTs	Self-management education interventions for COPD categorised as to whether or not they included COPD education and/or self-treatment guidelines (i.e. an action plan).	2	Work-related: Days lost from work Clinical: Symptoms; number and severity of exacerbations; lung function; exercise capacity Other: Quality of life; medication use; health care service use (hospital, A&E, other healthcare)
(b) DESCRIPTION OF INTERVENTIONS						
Authors and Date	Range of components included across studies				Intensity, duration and timing	
CARDIO-RESPIRATORY CONDITIONS						
Waddell & Burton (2004) ⁶	<i>Individual interventions not described</i>				<i>Not described</i>	
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) – Self Management Education Interventions						
Monninkhof et al (2002) ³⁵	Educational: (i) Group education rehabilitation without exercise - 1 study: content unspecified. (ii) Individual education (some also using patient brochure and audiotape; some delivered via home visits by respiratory health worker; some via simple verbal education). (iii) Group education (some also using patient brochure). (iv) Action plan with patient brochure. NB: Content of education programmes varied but included: COPD knowledge, medication/therapy, symptoms, coping (e.g. with breathlessness or exacerbations), stress management, relaxation exercise, meditation, guided imagery focusing on breathing, social and recreational activities, communication skills, inhalation technique, impairment, disability and handicap, interpreting tests, understanding blood gases, smoking cessation, nutrition, exercise.				Individual education: ranged from 1-4 hours, through 3 hours, up to 10 hours (home visits). Group education: ranged from 6 hours through 12 hours up to 26 hours. 2 studies of unspecified duration. Action plan and brochure: <1 hour duration. Rehabilitation without exercise group: unspecified duration - '6 sessions'	

(c) MAIN FINDINGS	
Authors and Date	Authors' findings and conclusions
CARDIO-RESPIRATORY CONDITIONS	
Waddell & Burton (2004) ⁶	Broad consensus that cardiac rehabilitation should be based on a biopsychosocial model but little robust data on vocational outcomes.
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) – Self Management Education Interventions	
Monninkhof et al (2002) ³⁵	The studies showed no effect of self-management education on hospital admissions, emergency room visits, days lost from work and lung function. Inconclusive results were observed on health-related quality of life, perhaps due to the limited use of COPD-specific instruments. Inconclusive results were observed on COPD symptoms and use of other healthcare resources, such as doctor and nurse visits. Self-management education reduced the need for rescue medication and led to an increased use of oral steroids and antibiotics for respiratory symptoms. Conclusions: The data available for this review are insufficient for forming recommendations about the effectiveness of self-management programmes for COPD patients.

Notes: ^a Intervention complexity code:

- 1 = Predominantly complex or multidisciplinary interventions (i.e. comprising more than one component - any combination of physical, psychological, occupational, and/or educational elements);
- 2 = Predominantly simple interventions (single component only – e.g. exercise alone);
- 3 = Mix of complex and simple interventions

TABLE 1.5: SYSTEMATIC REVIEWS OF INTERVENTIONS FOR OTHER HEALTH PROBLEMS

(a) CHARACTERISTICS						
Authors and Date	Population/ setting	Clinical condition(s)	Number and type of studies included	Type, intensity and duration of intervention(s) reviewed and/or skill mix involved	Intervention complexity ^a	Outcome measures
ACQUIRED BRAIN INJURY – Multidisciplinary Rehabilitation						
Turner-Stokes et al (2005) ⁴²	Working age adults - age 16 to 65 years - with acquired brain injury of any cause and range of severity (trauma, diffuse brain injury, stroke, haemorrhage). Settings: Inpatient, outpatient or day treatment, or community-based.	Acquired brain injury	14 RCTs	Multidisciplinary rehabilitation - defined as "any intervention delivered by two or more disciplines which aim to reduce disability and handicap". Included any study that stated or implied that it involved a multidisciplinary or interdisciplinary programme or used physical rehab, cognitive/ behavioural therapy, vocational/recreational therapy or psychosocial/counselling input..	1	Work-related: Work status; return to work; fitness for military duty. Clinical: Disability; mobility; dexterity; independence; health status; mood; neurological symptoms; global outcome. Other: Carer perceptions/ mood /health; social disability; participation; healthcare use.
CHRONIC RHEUMATIC DISEASES – Occupational Interventions						
de Buck et al (2002) ¹⁶	Patients with chronic rheumatic disease. Settings: Community; job centres; hospitals; work environment; rehabilitation centre. 2 studies were evaluating government funded programmes	Chronic rheumatic diseases	6 retrospective or prospective follow-up or uncontrolled studies	Vocational rehabilitation programmes aimed at helping patients re-enter or remain in the workforce.	1	Work-related: Vocational status - number and/or % on sick leave; employed; unemployed; early retirement; successful case closure; work disability or threatened job loss
WORK-RELATED INJURIES – Occupational Interventions						
Krause et al (1998) ³⁰	Adults of working age, including hospital, industry and armed services workers. Workplace settings only – programmes delivered in other settings were excluded	Workplace injuries	11 RCTs, prospective or retrospective cohort studies and cross-sectional surveys	Modified work programmes to aid earlier return to work - these may include in varying combinations: (a) light duty; (b) graded work exposure; (c) work trial; (d) supported employment or rehabilitation at the workplace; (e) sheltered employment; (f) specific employer accommodations. NB: Most modified work interventions were part of a broader intervention (not included in any detail in the review).	2	Work-related: Days lost (per injury; per year); successful return to work (RTW); RTW rate; lost time/wages; job retention; sustained RTW. Other: Various cost measures (medical, insurance).
Williams et al (2004) ⁴⁶	Workers/employees; compensation claimants. Type of employer or work role not	Work-related upper extremity disorders (e.g. tenosynovitis, epicondylitis,	8 RCTs and cohort studies	Workplace-based rehabilitation interventions - given at the workplace, involving treatment (not prevention). Interventions comprising	2	Work-related: Absenteeism; sick leave; modified working days; lost time for physical

	always specified. Interventions workplace based.	and cumulative trauma disorders).		either: (a) exercises; (b) in-house or worksite physical therapy; (c) worksite analysis; (d) nurse case managers' training on accommodation; (e) ergonomic to keyboards or (f) rest/exercise breaks		therapy; number of accommodations. Clinical: Pain; perceived tension; function; severity of complaints. Other: Self-reported perceived overall recovery.
(b) DESCRIPTION OF INTERVENTIONS						
Authors and Date	Range of components included across studies				Intensity, duration and timing	
ACQUIRED BRAIN INJURY – Multidisciplinary Rehabilitation						
Turner-Stokes et al (2005) ⁴²	Content not described in detail - a small number of studies specify input from a physiotherapist and/or occupational therapist. Interventions described as: Head injury rehabilitation team (early or late start); intensive arm/leg training by physiotherapist/ occupational therapist; in-patient rehabilitation; 'treatment as needed with full MD programme'; community-based outreach MD team; inpatient intensive programme; coordinated MD rehabilitation in specialist unit; intensive rehabilitation (with additional health care professionals); intensive MD rehabilitation (67% more therapy); outpatient physiotherapy/occupational therapy (intensive or standard); Oxford Head Injury service (advice and referral as required); Outpatient physiotherapy/occupational therapy (late treatment); intensive MD treatment (4 hours per day)				Not always specified. Where reported, intensity ranged from 4 hours per day (1 study) to 4 days per week (1 study) to 2 visits per week from community-based outreach team (1 study). Duration not always specified except in four studies - 8 week programme (inpatient intensive), 3 months, mean 6 months duration, up to 6 months. Timing: not always reported - 1 study compared early (before discharge) vs. late start (after discharge)	
CHRONIC RHEUMATIC DISEASES – Occupational Interventions						
de Buck et al (2002) ¹⁶	<p>Physical: Medical, dental or surgical consultation and/or procedures; physical therapy; occupational therapy; appliances or prosthesis.</p> <p>Psychological: Psychological counselling; group meetings.</p> <p>Occupational or social: Work adjustment - job modification, job assessment, vocational testing; retraining, advice on early retirement, job referral and placement services, working on trial, job search clubs, peer role model or business volunteer support; general support services - transport, maintenance.</p> <p>Educational: Training - new skills acquisition via higher education; work skill training.</p>				Not described	
WORK-RELATED INJURIES – Occupational Interventions						
Krause et al (1998) ³⁰	<p>Physical: Early reporting/detection and treatment of injuries; ongoing monitoring/evaluation of functional capacity; physical therapy; occupational therapy.</p> <p>Psychological: Psychological assessment and/or counselling; instruction in pain management techniques</p> <p>Occupational or social: Light duty only; light duty and work trial and special accommodations; light duty and graded work exposure; work trial + vocational rehabilitation; supported employment; ergonomic intervention + clinical intervention; light duty or reduced hours or equipment modification; off-site work conditioning or work hardening</p> <p>Educational: education on physical/posture aspects of injury; 'training' (unspecified)</p> <p>Communication or coordination: collaboration between employer and physician or programme staff</p>				Not described	
Williams et al (2004) ⁴⁶	<p>Physical: Exercise groups (in workplace) with home exercises; individualised physical therapy (in-house or outside) - including massage, strength and flexibility exercises, stretching, weight training, passive mobilisation as necessary and home exercises; in-house physical therapy - included exercise, tubing, exercise putty, ultrasound, thermal modalities, stationary bicycle and treadmill</p> <p>Occupational or social: Ergonomic keyboard modifications; rest breaks; rest and exercise breaks; worksite analysis (assessments over 1 year period); nurse case managers trained in workplace accommodation (integrated case management</p>				Individualised physical therapy: 1-hour sessions, 2 times a week for 10 treatments. Exercise groups: 30 minutes, 3 times a week for 6 weeks.	

	approach - including conducting ergonomic evaluations, implementing work accommodations, training claimants in problem-solving skills to reduce barriers to RTW <i>Educational:</i> None for employees. Workplace accommodation training for nurse case managers.	
(c) MAIN FINDINGS		
Authors and Date	Authors' findings and conclusions	
ACQUIRED BRAIN INJURY – Multidisciplinary Rehabilitation		
Turner-Stokes et al (2005) ⁴²	For mild brain injury - strong evidence that most patients make a good recovery with provision of appropriate information without additional specific intervention. For moderate to severe brain injury - strong evidence of benefit from formal intervention. For patients already in rehabilitation, strong evidence that more intensive programmes are associated with earlier functional gains and moderate evidence that continued outpatient therapy can help sustain gains made in early post-acute rehabilitation. Limited evidence that specialist inpatient rehabilitation and specialist multidisciplinary community rehabilitation provide additional functional gains.	
CHRONIC RHEUMATIC DISEASES – Occupational Interventions		
de Buck et al (2002) ¹⁶	5 of the 6 studies showed marked positive effect on work status in the short-term - with between 15% and 69% successfully returning to work (usually defined as working minimum of 60 days prior to case closure). However, authors conclude there is limited evidence of benefit due to methodological limitations and differences of included studies. There is insufficient knowledge about effectiveness of vocational rehabilitation programmes.	
WORK-RELATED INJURIES – Occupational Interventions		
Krause et al (1998) ³⁰	Modified work programmes facilitate return to work for temporarily and permanently disabled workers. Injured workers who are offered modified work return to work about twice as often as those who are not. Similarly, modified work programmes cut the number of lost work days in half. The available evidence also suggests that modified work programmes are cost-effective. It remains unclear which components of modified work programmes are most effective and this may differ depending on the type of injury. Only 4 studies reported cost data so it is premature to draw conclusions about efficiency - but the available evidence suggests modified work programmes are cost-effective.	
Williams et al (2004) ⁴⁶	Insufficient evidence to identify effective workplace rehabilitation interventions for upper extremity disorders - existing evidence is inadequate in scope and inconsistent in quality. Only 8 studies were identified with methodological limitations. There were however some positive findings (e.g. for ergonomic modifications, rest and exercise breaks, nurse case managers' training on accommodations, exercise programmes) but these are limited by limited numbers of studies with small sample sizes, inadequate reporting of interventions and results, failure to include a control group, lack of standardised outcome measures and statistical analyses.	

Notes: ^a Intervention complexity code:

- 1 = Predominantly complex or multidisciplinary interventions (i.e. comprising more than one component - any combination of physical, psychological, occupational, and/or educational elements);
- 2 = Predominantly simple interventions (single component only – e.g. exercise alone);
- 3 = Mix of complex and simple interventions

**Appendix 2: Stakeholder Consultation Data Tables
(Round 2)**

SECTION A

Table 2.1 Appropriateness of referring patients receiving sickness certification (Med 3/Med 5) with specified conditions to an intervention programme to help them return to work early (n = 9 panellists)

	All Scores disagreement)	Median Panel Score	Category	Disagreement ($\sqrt{=}$)
For patients with <u>mental health conditions</u> :				
1st certification, <u>mild-moderate</u> symptoms				
01 Lasting < 1 month and receiving/ awaiting specialist health input	1 1 1 2 2 3 4 7 7	2	Inappropriate	
02 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	3 4 4 4 5 5 6 7 9	5	Uncertain	
03 Lasting > 1 month and receiving/ awaiting specialist health input	3 4 5 5 5 7 7 9 9	5	Uncertain	
04 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	5 7 7 7 7 9 9 9 9	7	Appropriate	
1st certification, <u>severe</u> symptoms				
05 Lasting < 1 month and receiving/ awaiting specialist health input	1 1 1 1 1 2 3 5 7	1	Inappropriate	
06 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	2 2 2 2 2 3 4 5 9	2	Inappropriate	
07 Lasting > 1 month and receiving/ awaiting specialist health input	2 4 5 5 5 5 7 7 7	5	Uncertain	
08 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	3 5 5 6 7 7 7 9 9	7	Appropriate	
Repeat, recurrent or extended certification, <u>mild-moderate</u> symptoms				
09 Lasting < 1 month and receiving/ awaiting specialist health input	2 2 4 4 4 5 6 7 7	4	Uncertain	
10 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	4 6 6 7 7 7 8 9 9	7	Appropriate	
11 Lasting > 1 month and receiving/ awaiting specialist health input	4 5 5 5 5 7 7 9 9	5	Uncertain	
12 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	7 7 8 9 9 9 9 9 9	9	Appropriate*	
Repeat, recurrent or extended certification, <u>severe</u> symptoms				
13 Lasting < 1 month and receiving/ awaiting specialist health input	1 2 2 2 2 3 4 5 7	2	Inappropriate	
14 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	2 2 3 4 4 5 5 6 9	4	Uncertain	
15 Lasting > 1 month and receiving/ awaiting specialist health input	2 4 5 5 5 6 7 7 7	5	Uncertain	
16 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	3 5 5 5 6 7 7 9 9	6	Uncertain	

Statements judged as appropriate (without disagreement) are highlighted in **bold**.

Statements judged 'definitely appropriate' (median 9) are also marked with an asterisk*.

Any statement with disagreement is classified as uncertain, regardless of panel's median rating.

Table 2.2 Appropriateness of referring patients receiving sickness certification (Med 3/Med 5) with specified conditions to an intervention programme to help them return to work early (n = 9 panellists)

	All scores	Median Panel	Category	Disagreement (√ =
disagreement)				
For patients with <u>musculoskeletal conditions</u> :				
<hr/>				
1st certification, <u>mild-moderate</u> symptoms				
17 Lasting < 1 month and receiving/ awaiting specialist health input	1 1 2 2 4 6 6 7 9	4	Uncertain	
18 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	2 3 6 6 7 7 7 8 9	7	Appropriate	
19 Lasting > 1 month and receiving/ awaiting specialist health input	1 3 4 6 6 7 9 9 9	6	Uncertain	
20 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	3 8 8 8 9 9 9 9 9	9	Appropriate*	
1st certification, <u>severe</u> symptoms				
21 Lasting < 1 month and receiving/ awaiting specialist health input	1 1 1 2 3 4 6 7 8	3	Inappropriate	
22 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	2 2 3 3 4 5 6 8 9	4	Uncertain	
23 Lasting > 1 month and receiving/ awaiting specialist health input	1 4 5 5 6 7 7 8 9	6	Uncertain	
24 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	3 3 7 7 8 8 9 9 9	8	Appropriate	
Repeat, recurrent or extended certification, <u>mild-moderate</u> symptoms				
25 Lasting < 1 month and receiving/ awaiting specialist health input	1 2 2 5 5 7 7 8 9	5	Uncertain	√
26 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	3 4 5 7 8 8 8 9 9	8	Appropriate	
27 Lasting > 1 month and receiving/ awaiting specialist health input	3 5 6 6 6 9 9 9 9	6	Uncertain	
28 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	7 8 9 9 9 9 9 9 9	9	Appropriate*	
Repeat, recurrent or extended certification, <u>severe</u> symptoms				
29 Lasting < 1 month and receiving/ awaiting specialist health input	1 2 3 4 5 6 7 8 9	5	Uncertain	√
30 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	1 5 5 7 7 8 8 9 9	7	Appropriate	
31 Lasting > 1 month and receiving/ awaiting specialist health input	4 5 6 7 7 7 7 9 9	7	Appropriate	
32 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	7 7 8 9 9 9 9 9 9	9	Appropriate*	

Statements judged as appropriate are highlighted in **bold**.

Statements judged 'definitely appropriate' (median 9) are also marked with an asterisk*.

Any statement with disagreement is classified as uncertain, regardless of panel's median rating.

Table 2.3 Appropriateness of referring patients receiving sickness certification (Med 3/Med 5) with specified conditions to an intervention programme to help them return to work early (n = 9 panellists)

	All Scores	Median Panel Score	Category	Disagreement (√ = disagreement)
For patients with <u>cardio-respiratory conditions</u> :				
1st certification, <u>mild-moderate</u> symptoms				
33 Lasting < 1 month and receiving/ awaiting specialist health input	1 1 1 2 3 3 6 6 9	3	Inappropriate	
34 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	1 1 2 3 3 5 7 8 9	3	Uncertain	√
35 Lasting > 1 month and receiving/ awaiting specialist health input	1 3 3 5 5 7 8 9 9	5	Uncertain	√
36 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	3 5 7 8 8 9 9 9 9	8	Appropriate	
1st certification, <u>severe</u> symptoms				
37 Lasting < 1 month and receiving/ awaiting specialist health input	1 1 1 2 3 3 3 4 7	3	Inappropriate	
38 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	1 1 2 3 3 4 6 8 9	3	Inappropriate	
39 Lasting > 1 month and receiving/ awaiting specialist health input	1 3 4 5 5 7 7 8 9	5	Uncertain	
40 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	1 3 5 6 6 9 9 9 9	6	Uncertain	
Repeat, recurrent or extended certification, <u>mild-moderate</u> symptoms				
41 Lasting < 1 month and receiving/ awaiting specialist health input	1 1 3 4 4 4 6 8 9	4	Uncertain	
42 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	1 1 4 4 6 7 7 8 9	6	Uncertain	
43 Lasting > 1 month and receiving/ awaiting specialist health input	3 3 6 6 6 7 8 9 9	6	Uncertain	
44 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	1 5 6 8 8 9 9 9 9	8	Appropriate	
Repeat, recurrent or extended certification, <u>severe</u> symptoms				
45 Lasting < 1 month and receiving/ awaiting specialist health input	1 1 2 3 4 4 4 7 8	4	Uncertain	
46 Lasting < 1 month, <u>not</u> receiving/ awaiting specialist health input	1 1 4 5 5 5 7 8 9	5	Uncertain	
47 Lasting > 1 month and receiving/ awaiting specialist health input	1 4 5 5 5 6 7 7 9	5	Uncertain	
48 Lasting > 1 month, <u>not</u> receiving/ awaiting specialist health input	1 6 7 7 7 8 9 9 9	7	Appropriate	

Statements judged as appropriate (without disagreement) are highlighted in **bold**.

Statements judged 'definitely appropriate' (median 9) are also marked with an asterisk*.

Any statement with disagreement is classified as uncertain, regardless of panel's median rating.

Table 2.4 Appropriateness of referring patients receiving sickness certification (Med 3/Med 5) for any cause to an intervention programme to help them return to work early (n = 9 panellists)

	All Scores	Median Panel disagreement) Score	Category	Disagreement (√ =
Patients with a <u>moderate - high level</u> of perceived job satisfaction, with:				
<u>no access</u> to occupational health service				
49 in receipt of sickness certification for 1-3 weeks	1 1 2 3 4 4 5 7 9	4	Uncertain	
50 in receipt of sickness certification for 4 - 6 weeks	3 3 6 7 8 9 9 9 9	8	Appropriate	
51 in receipt of sickness certification for 7 - 12 weeks	5 6 7 8 8 9 9 9 9	8	Appropriate	
52 in receipt of sickness certification for 13 or more weeks	7 8 8 9 9 9 9 9 9	9	Appropriate*	
<u>access</u> to occupational health service				
53 in receipt of sickness certification for 1-3 weeks	1 1 1 3 3 4 5 5 6	3	Inappropriate	
54 in receipt of sickness certification for 4 - 6 weeks	1 2 2 4 4 5 6 6 7	4	Uncertain	
55 in receipt of sickness certification for 7 - 12 weeks	2 4 5 5 7 7 8 8 8	7	Appropriate	
56 in receipt of sickness certification for 13 or more weeks	6 7 8 8 8 9 9 9 9	8	Appropriate	
Patients with a <u>low level</u> of perceived job satisfaction, with:				
<u>no access</u> to occupational health service				
57 in receipt of sickness certification for 1-3 weeks	1 1 3 4 5 6 6 7 9	5	Uncertain	
58 in receipt of sickness certification for 4 - 6 weeks	2 3 5 6 7 7 7 9 9	7	Appropriate	
59 in receipt of sickness certification for 7 - 12 weeks	3 5 6 6 7 8 9 9 9	7	Appropriate	
60 in receipt of sickness certification for 13 or more weeks	5 6 7 7 9 9 9 9 9	9	Appropriate*	
<u>access</u> to occupational health service				
61 in receipt of sickness certification for 1-3 weeks	1 1 1 3 5 5 5 7 9	5	Uncertain	
62 in receipt of sickness certification for 4 - 6 weeks	3 3 4 5 6 7 7 8 9	6	Uncertain	
63 in receipt of sickness certification for 7 - 12 weeks	5 5 5 6 7 8 9 9 9	7	Appropriate	
64 in receipt of sickness certification for 13 or more weeks	6 6 7 7 8 8 9 9 9	8	Appropriate	

Statements judged as appropriate (without disagreement) are highlighted in **bold**.
 Statements judged 'definitely appropriate' (median 9) are also marked with an asterisk*.
 Any statement with disagreement is classified as uncertain, regardless of panel's median rating.

SECTION B

Table 2.5 Appropriate service structure for the early intervention service (n = 9 panellists)

	All Scores	Median Panel Score	Category	Disagreement (√ = disagreement)
01 Multidisciplinary team, biopsychosocial & vocational support	5 7 7 8 9 9 9 9 9	9	Appropriate*	
02 Multidisciplinary team, vocational support only	3 4 5 5 5 5 5 6 8	5	Uncertain	
03 Single healthcare professional/ specialist, biopsychosocial & vocational support	5 5 6 6 7 7 7 7 8	7	Appropriate	
04 Single healthcare professional/ specialist, vocational support only	2 4 4 4 5 5 6 6 7	5	Uncertain	

Statements judged as appropriate (without disagreement) are highlighted in **bold**.

Statements judged 'definitely appropriate' (median 9) are also marked with an asterisk*.

Any statement with disagreement is classified as uncertain, regardless of panel's median rating.

Table 2.6 Appropriateness of prioritizing access to required health and social care services for patients receiving sickness certification (Med 3/5) over and above other patients generally who are in need of these services (n = 9 panellists)

	All Scores	Median Panel Score	Category	Disagreement (✓ = disagreement)
05 For patients of working age (irrespective of employment status)	6 6 6 7 8 8 8 9 9	8	Appropriate	
06 For patients in active paid employment	5 7 8 8 8 8 8 9 9	8	Appropriate	
07 For patients at risk of losing their employment	8 8 9 9 9 9 9 9 9	9	Appropriate*	

Statements judged as appropriate (without disagreement) are highlighted in **bold**.

Statements judged 'definitely appropriate' (median 9) are also marked with an asterisk*.

Any statement with disagreement is classified as uncertain, regardless of panel's median rating.

Table 2.7 Appropriate location/ referral system for the intervention service and relationship with employers (n = 9 panellists)

	All Scores	Median Panel Score	Category	Disagreement (√ = disagreement)
Location of intervention service:				
08 Within the primary healthcare team (attached to GP surgeries)	1 1 2 6 7 7 8 9 9	7	Appropriate	√
09 Within a local Department for Work and Pensions facility	3 3 4 5 7 7 8 9 9	7	Appropriate	
Referrals to the service received from:				
10 A doctor within the NHS	8 8 9 9 9 9 9 9 9	9	Appropriate*	
11 Any registered healthcare professional within the NHS	7 8 8 8 8 9 9 9 9	8	Appropriate	
12 Any registered healthcare professional outside the NHS	4 6 6 8 8 8 9 9 9	8	Appropriate	
13 The employer organisation (e.g. human resources or manager)	3 4 5 5 6 7 7 9 9	6	Uncertain	
14 Self-referral from the patient	3 5 7 7 9 9 9 9 9	9	Appropriate*	
Relationship between early intervention service and employer:				
15 Work together directly to implement appropriate work modifications	7 8 9 9 9 9 9 9 9	9	Appropriate*	
16 Work together indirectly through the patient to implement appropriate work modifications	1 2 3 4 4 5 6 7 9	4	Uncertain	
17 Be completely independent of each other	1 1 1 1 2 2 2 3 8	2	Inappropriate	

Statements judged as appropriate (without disagreement) are highlighted in **bold**.
 Statements judged 'definitely appropriate' (median 9) are also marked with an asterisk*.
 Any statement with disagreement is classified as uncertain, regardless of panel's median rating.

SECTION C

Table 2.8 Necessary resources/ skills within the intervention programme (n = 9 panellists)

	All scores	Median Panel Score	Category	Disagreement (√ = disagreement)
01 Healthcare professional specialising in occupational health	5 7 8 8 8 8 8 9 9	8	Necessary	
02 Community psychiatric nurse	4 4 5 6 6 7 8 8 9	6	Uncertain	
03 Physiotherapist	7 7 8 8 8 8 9 9 9	8	Necessary	
04 Occupational therapist	5 5 6 6 7 7 7 8 9	7	Necessary	
05 Return to work coordinator (to assist with vocational issues)	5 6 7 7 7 8 9 9 9	7	Necessary	
06 Clinical psychologist	6 6 6 6 7 7 8 8 9	7	Necessary	
07 Health professional trained in specific psychological techniques*	6 6 7 7 7 7 7 8 9	7	Necessary	
08 Representative with knowledge of social security & benefits system	1 5 6 6 7 8 8 8 9	7	Necessary	
09 Pharmacist	1 2 2 2 3 3 3 5 6	3	Unnecessary	
10 Social worker	2 3 4 4 5 6 7 7 7	5	Uncertain	

* eg Cognitive Behavioural Therapy


Statements judged as necessary (without disagreement) are highlighted in **bold**.

Statements judged 'an absolute necessity for all patients' (median 9) are also marked with an asterisk*.

Any statement with disagreement is classified as uncertain, regardless of panel's median rating.

Appendix 3: Screenshots of online survey


ROUND 1: SAMPLE PAGE



PENINSULA
MEDICAL SCHOOL
UNIVERSITY OF EXETER & PLYMOUTH

The Sickness Absence Project

Developing early interventions in Primary Care for reducing the length of sickness absence: A service model development project

Previous

Section A. What would be the identifying factors of the patient group who would be suitable for a targeted intervention to help their early return to work?


For patients with **mental health conditions** receiving sickness certification (Med 3/5), how appropriate would it be to refer patients with the following indications to an intervention programme to help them return to work early:

A. For patients **being certified for the first time**


with mild to moderate symptoms:	
1. lasting less than 1 month who are currently awaiting or receiving specialist health input	Please select ▼
2. lasting less than 1 month who are not currently awaiting or receiving specialist health input	Please select ▼
3. lasting more than 1 month who are currently awaiting or receiving specialist health input	Please select ▼
4. lasting more than 1 month who are not currently awaiting or receiving specialist health input	Please select ▼
with severe symptoms:	
5. lasting less than 1 month who are currently awaiting or receiving specialist health input	Please select ▼
6. lasting less than 1 month who are not currently awaiting or receiving specialist health input	Please select ▼
7. lasting more than 1 month who are currently awaiting or receiving specialist health input	Please select ▼
8. lasting more than 1 month who are not currently awaiting or receiving specialist health input	Please select ▼

Section A Questions 1-8 Notes/comments

Press the submit button to submit your responses and move to the next page




Panel's Evidence Summary



Definitions

Definitions for Terminologies



1-9

Definition of Scale Ratings

ROUND 2: SAMPLE PAGE

PENINSULA
MEDICAL SCHOOL
UNIVERSITY OF EXETER & PENINSULA

The Sickness Absence Project

Developing early interventions in Primary Care for reducing the length of sickness absence: A service model development project

Previous

Remember to focus on the highlighted statements, as these signify panel disagreement

Section A. What would be the identifying factors of the patient group who would be suitable for a targeted intervention to help their early return to work?

For patients with mental health conditions receiving sickness certification (Med 3/5), how appropriate would it be to refer patients with the following indications to an intervention programme to help them return to work early:

A. For patients being certified for the first time

	Panel's view of appropriateness	Panel's rating (median)	Your round 1 rating Click to change (if wished)
with mild to moderate symptoms:			
→ 1. lasting less than 1 month who are currently awaiting or receiving specialist health input	Inappropriate	3	2 <input style="width: 30px;" type="text"/>
2. lasting less than 1 month who are not currently awaiting or receiving specialist health input	Uncertain	5	6 <input style="width: 30px;" type="text"/>
3. lasting more than 1 month who are currently awaiting or receiving specialist health input	Uncertain	5	2 <input style="width: 30px;" type="text"/>
4. lasting more than 1 month who are not currently awaiting or receiving specialist health input	Appropriate	7	5 <input style="width: 30px;" type="text"/>
with severe symptoms:			
5. lasting less than 1 month who are currently awaiting or receiving specialist health input	Inappropriate	1	1 <input style="width: 30px;" type="text"/>
6. lasting less than 1 month who are not currently awaiting or receiving specialist health input	Inappropriate	2	7 <input style="width: 30px;" type="text"/>
7. lasting more than 1 month who are currently awaiting or receiving specialist health input	Uncertain	5	4 <input style="width: 30px;" type="text"/>
8. lasting more than 1 month who are not currently awaiting or receiving specialist health input	Appropriate	7	3 <input style="width: 30px;" type="text"/>

Section A Questions 1-8 Notes/comments from previous round

Some will absolutely not want to return to the same place of work and the note is 'terminal leave'.
In general all should be encouraged to return early, however, often people fear returning.
Would depend on the condition of the patient - e.g. someone with mild/moderate depression may be better continuing to work, while someone who was floridly psychotic would be quite unable or unsafe to do so.

Appendix 4: Evidence summary e-mailed to participants

Developing early interventions in Primary Care for reducing the length of sickness absence: A service model development

Thank you for participating as a panel member in our project. In responding to the statements of our web survey, we would like you take into consideration the current information and evidence available on sickness absence.

This document outlines the background information and evidence relating to early interventions for patients on sickness absence.

What is coming up...

- ▽ *Statistics on sickness absence*
- ▽ *The profile of the patients*
- ▽ *The profile of the employer organisations*
- ▽ *Common morbidities*
- ▽ *Relationship between health and work*
- ▽ *Interventions for returning to work*
- ▽ *Timing and intensity of interventions*
- ▽ *Components of an early intervention*
- ▽ *References*



Statistics on Sickness Absence

1	2	3	4	5
6	7	8	9	

- ▽ *The rate of sickness absence in employer based surveys is approximately 4% [1]*
- ▽ *3000 patients per week move from statutory sickness pay to incapacity benefit [2]*
- ▽ *7% of the working age population is on incapacity benefit [3]*
- ▽ *Over 87% of those claiming incapacity benefit have been claiming for over a year [3]*
- ▽ *Qualitative data indicates that there is little communication between GPs and employers during sickness absence, or with DWP representatives, when incapacity benefit eligibility is assessed [92]*

The profile of the patients

1	2	3	4	5
6	7	8	9	

There is very little information on the prevalence of MED 3 and MED 5 certification.

However, Shiels and colleagues (2004) [4] studied MED 3/5 certification in 87 GP practices across urban and rural areas over one year, providing insights into the profile of patients on sickness absence (covering approximately 50,000 of the working age population).

Findings from Shiels et al (2004):

- ▽ 12.5% of working age patients will require MED 3 or MED 5 certification in an average year of which half will require more than one certificate—equating to approximately 750 patients in an average practice list (6000 working age patients) per year
- ▽ 9.9 weeks is the average length of certification
- ▽ Approximately 1.25% of the working age population will be absent from work for over 28 weeks in a year—equating to approximately 70 patients in an average practice per year
- ▽ The mean age for claimants was 39.9 years and 44.5% were male.

The profile of the employer organisations

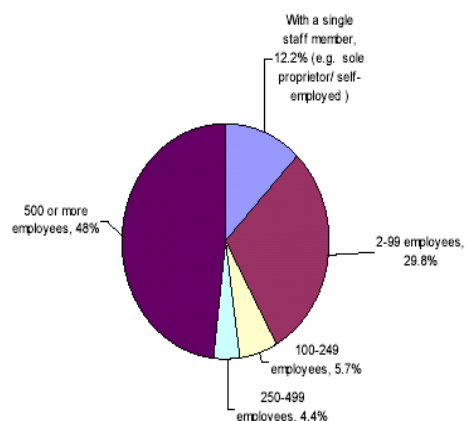
1	2	3	4	5
6	7	8	9	

The majority of the working age population are economically active (78.7%), including 5.4% who are unemployed and seeking work [6].

Sickness absence in public sector organisations is approximately 10% as compared to 4% in private sector organisations [2]. In line with productivity and efficiency measures, public sector organisations have recently become the focus of attempts to reduce sickness absence rates.

Many larger employers have an occupational health service, providing employees at risk of sickness absence with quicker access to key services such as physiotherapy and counselling where needed. However, over 40% of all employees are employed in smaller organisations (<100 employees) and are less likely to have access to specialist occupational support.

Breakdown of employment in the UK economy by number of employees, start 2006

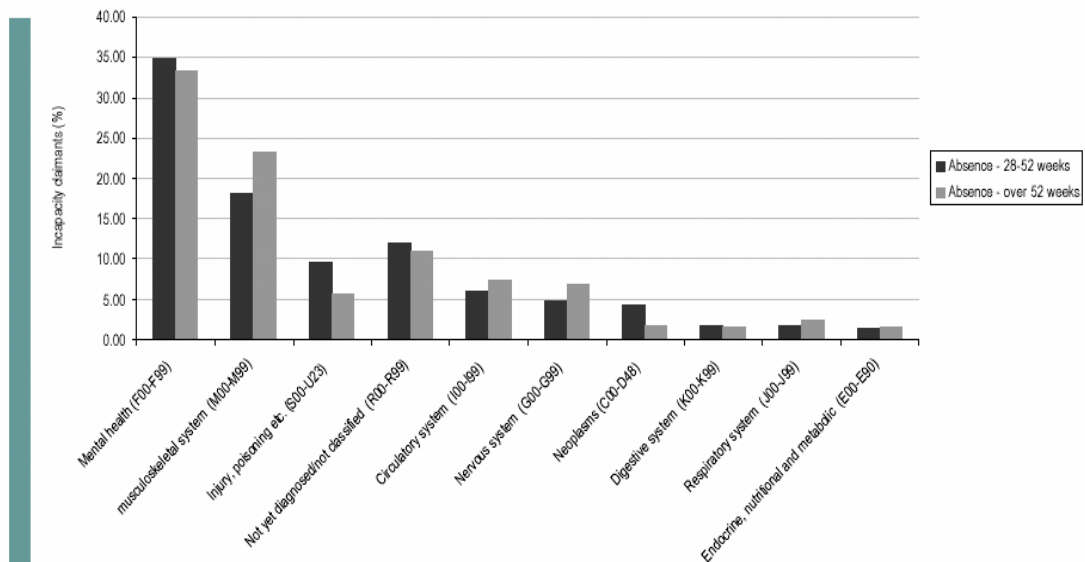


Source: SME Statistics 2006, National Statistics/ Department for Business, enterprise & Regulatory Reform

Common morbidities

1	2	3	4	5
6	7	8	9	

Summary of the ten primary conditions relating to work-related ill health for incapacity benefit and severe disablement allowance. (Source: NOMIS, 2007 [3])



The relationship between health and work

1	2	3	4	5
6	7	8	9	

Waddell and Burton (2006) [5] carried out a review investigating the relationship between work, health and well being. Overall, the conclusion is that work is generally beneficial for health as long as you have a 'good job'. Some of the research findings are as follows:

- ▽ Job insecurity has an adverse effect on health [17-21]
- ▽ Increased employment rates lead to lower mortality rates [11]
- ▽ The beneficial effects of re-employment depend mainly on the security of the new job, and also the individual's motivation, desires and satisfaction [22-30]

- ▽ There is a strong positive association between unemployment and:
 - increased rates of overall mortality, mortality from cardiovascular disease, lung cancer and suicide [7-12]
 - poorer mental health and psychological well-being, more psychological distress, minor psychological/psychiatric morbidity, increased rates of parasuicide [8,13-14]
 - poorer general health, somatic complaints, long standing illness, disability [9,11,15-16]

Conclusions for specific conditions are continued on the next page.

About the evidence: please note that only statements with generally consistent findings provided by (systematic review(s) of) multiple scientific studies have been included from the work by Waddell and Burton (2006) [5].

The relationship between health and work: mental health conditions

1	2	3	4	5
6	7	8	9	

There is little direct evidence on the impact of return to work for people with mild/moderate mental health problems, but severe mental health and stress have been covered in the literature:

- ▽ people with [common] mental health problems are more likely to be or to become workless..with a risk of downward spiral of worklessness, deterioration in mental health and consequent reduced chances of gaining employment [33-35]
- ▽ cross sectional studies show an association between various psychosocial characteristics of work (e.g. job satisfaction) and various subjective measures of general health and psychological well-being [36-42]

.....conclusions from Waddell & Burton (2006) continued on the next page.

The relationship between health and work: Musculoskeletal (MSK) and cardio-respiratory

1	2	3	4	5
6	7	8	9	

Musculoskeletal (MSK) conditions (literature mainly on low back pain):

- ▽ there is a high community prevalence of MSK conditions, yet most people with MSK conditions can and do work, even when symptomatic [43-51]
- ▽ activity-based rehabilitation and early return to work (or remaining at work) are therapeutic and beneficial for health and well-being for most workers with MSK conditions [46, 52-62]

Cardio-respiratory conditions (including myocardial infarction, hypertension and asthma):

- ▽ many workers with cardiovascular and respiratory conditions do manage to return to work, but the rates vary and return to work may not be sustained [66-75]
- ▽ prevention of further exposure is fundamental to the clinical management and rehabilitation of occupational asthma [73, 75-78]

Interventions for returning to work

1	2	3	4	5
6	7	8	9	

- ▽ There is strong evidence that a general biopsychosocial approach to rehabilitation that addresses the health condition, personal factors and occupational factors can be effective across a range of common health problems [58].
- ▽ A combination of education, psychological, physical and work conditioning, possibly supplemented with relaxation exercises, appears to be essential to the success of return to work treatment programmes [81]
- ▽ Organisational interventions such as transitional work arrangements (temporary modified work) and improving communications between health care and the workplace, can facilitate early and sustained return to work [55, 58, 60, 63-65]
- ▽ Although there is no direct evidence, the general consensus is that a multidisciplinary approach with all the key professionals onsite is most appropriate [58] (i.e. health professionals including GPs & occupational health, vocational services and employers, including unions)
- ▽ One study using an 'early intervention with integrated approach' did significantly increase return to work after one year (90% intervention vs 79% usual care controls) by including medical, ergonomic and psychological/social components [80]

Timing and Intensity of interventions

1	2	3	4	5
6	7	8	9	

Timing of interventions

There is no direct evidence on timing of interventions and studies of patients on MED 3/5 certification are limited. The arguments for early interventions are based on the following observations:

- ▽ The most active area of research (low back pain) indicates that continuing at work and being active are key to recovery
- ▽ There is a general indication that interventions are required between 1 and 6 weeks absence from work to avoid unnecessary longer term absence [58]
- ▽ In the current system, the patient will move onto incapacity benefit (and out of the work environment) at 28 weeks of sickness absence. Therefore interventions need to begin early enough to prevent the transition to Incapacity Benefit.

Intensity of interventions

There is clearly a need for more robust evidence in this area of research, and there are no known levels of intensity that are more effective than others.

One systematic review highlighted that intensive multidisciplinary biopsychosocial rehabilitation with functional restoration is more effective [in reducing pain and improving function] than less intensive multidisciplinary biopsychosocial rehabilitation programmes or usual care for chronic low back pain [82].

Components of an early intervention

1	2	3	4	5
6	7	8	9	

There is no strong evidence to draw on to identify which individual components are likely to be effective across the range of conditions identified, however we have identified the following commonalities across successful interventions through a synthesis of the relevant literature:

- ▽ a psychosocial element of care is essential, particularly those using cognitive behavioural approaches aimed at correcting dysfunctional beliefs [58, 83]. These approaches may be combined with intensive physical training or graded activity programmes [84-87].
- ▽ educational components such as 'back school*' type interventions have appeared to be successful [83,89].
- ▽ a focus on good communication between relevant parties is vital, for example, coordination of primary health care, a return to work coordinator, early contact between worker and workplace, contact between healthcare provider and the workplace all have a role [88,90]
- ▽ occupational components, including close involvement with workplace, work-related goals and focus, ergonomic or modified work interventions, work accommodation offers, and workplace visits with early return to work appear to be effective [58, 83, 90-91]

* Educational interventions for back problems e.g. advice on managing/ avoiding back problems

Developing early interventions in Primary Care for reducing the length of sickness absence: A service model development - project

1	2	3	4	5
6	7	8	9	

Thank you for participating as a panel member in our project.

If you have any questions regarding the information that we have provided or would like to discuss the content with our researcher, please contact Alice Moseley.

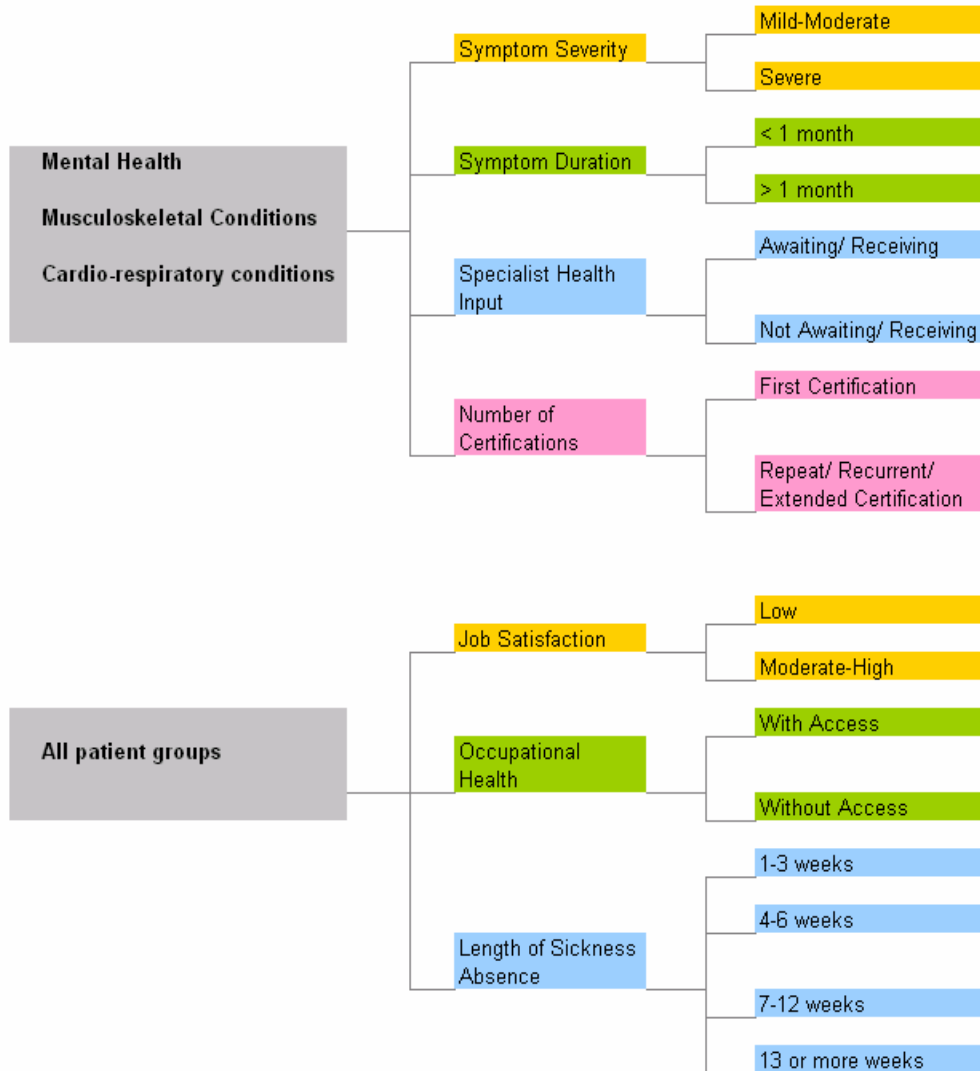
The Sickness Absence Project,
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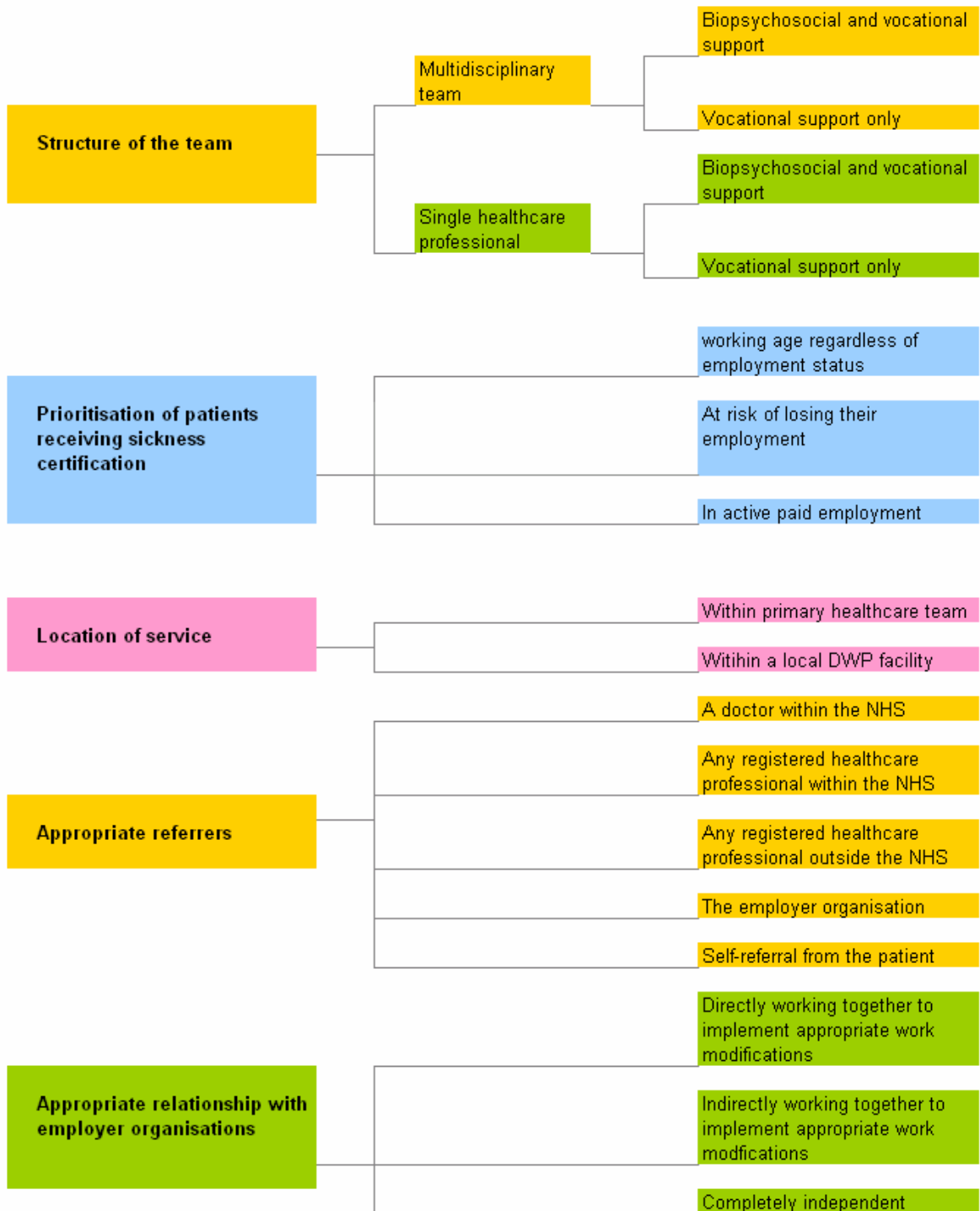
.....a full list of references for this document can be found on the next 3 pages

Appendix 5: Structure of the panel survey

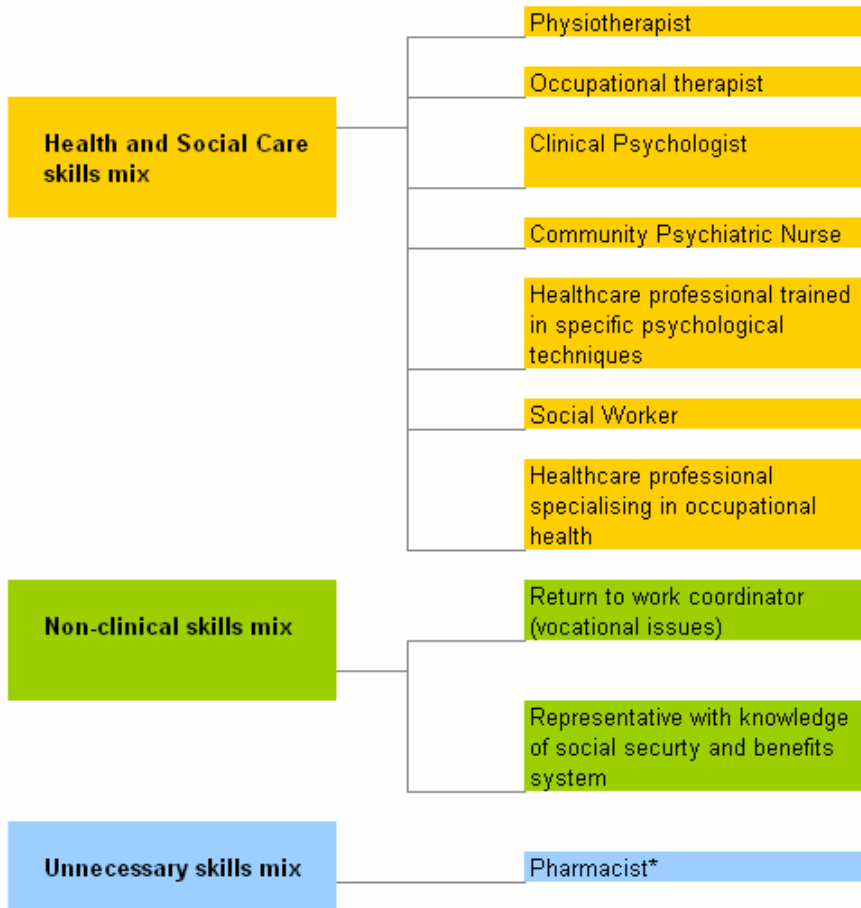
Section A: Characteristics of the Patient Group



Section B: Intervention components and location



Section C: Skills for delivering return to work interventions



* Pharmacist option was included as a reliability test of panellists' responses