Fit For Work?

Musculoskeletal Disorders in the European Workforce

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Having a significant proportion of Europe's working age population either temporarily or permanently unable to work through ill-health – even in a favourable economic climate – can reduce the aggregate level of labour productivity in an economy and damage the competitiveness and effectiveness of private and public sector organisations. In depressed labour markets, there is a heightened risk that those with long-term or chronic health conditions will find themselves detached from the workplace for long periods, with little prospect of returning quickly.

***Fit for Work Europe* – a focus on musculoskeletal disorders (MSDs)**

Over 44 million (one in six) members of the European Union (EU) workforce now have a long-standing health problem or disability that affects their ability to work, and musculoskeletal disorders (MSDs) – conditions affecting bones, joints and connective tissue – account for a higher proportion of sickness absence from work than any other health condition. Indeed, over 40 million workers in Europe are affected by MSDs attributable to their work.

This report is the product of a major study – ***Fit for Work Europe*** – conducted by The Work Foundation across 23 European countries (www.fitforworkeurope.eu). The study has looked in some detail at:

- the impact that MSDs have on the working lives of thousands of European workers, the adequacy of the treatment and support they receive
- their experiences in and out of work
- the effect of their condition on their family and colleagues
- the human and financial costs involved.

Specifically, we have looked at the impact of **low back pain** and **work-related upper limb disorders** (WRULDs) – two groups of conditions which are usually characterised by short but intense episodes of pain and incapacity – and **rheumatoid arthritis** (RA) and **spondyloarthropathy** (SpA), two inflammatory conditions that are often progressive and increasingly incapacitating.

We undertook a review of the recent academic and practitioner research on the relationship between these MSDs and labour market participation, and conducted interviews with over 100 acknowledged experts in this field from around Europe. The report examines the causes, effects and costs of MSDs in the European workforce and assesses what more can be done by policymakers, health care systems, social welfare regimes, clinicians, employers and by workers themselves to help alleviate the often damaging economic and social consequences of this widespread, but often hidden, problem.

Extent, causes and consequences of MSDs

The quality and quantity of data on the definition, prevalence, impact and costs of MSDs vary considerably between countries. Nonetheless, we know enough to conclude that chronic musculoskeletal pain affects **100 million people** in Europe and that it is widespread in Europe's working age population – although undiagnosed in over 40 per cent of cases. Despite the growth of stress-related illness among European workers, MSDs remain the single biggest cause of absence from work. It is estimated that up to **2 per cent of European gross domestic product (GDP)** is accounted for by the direct costs of MSDs each year.

Of the four categories of MSDs that the ***Fit for Work*** research concentrates on both WRULDs and low back pain affect large numbers of workers and are frequently caused by work – either through physical strain, repetitive movement or poor posture. The second two, RA and SpA, while affecting smaller numbers of workers, are not caused by work, but can be made worse by work. However, **work can be both a cause, or aggravator, and a cure.** In all cases there is clear evidence that well-designed work environments and flexible working arrangements can support job retention, and phased return to work and that work – especially if it is good work – can be good for health, well-being and recovery.

So, what is the extent of the problem across Europe?

- Almost **a quarter** of European workers report that they have experienced muscular pain in their neck, shoulders and upper limbs. The symptoms of WRULDs can present in the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness and tingling sensations in the affected area. These conditions can be caused, or exacerbated, by work which involves repetitive movements, prolonged keyboard use, heavy lifting, poor posture or other forms of work-related physical strain. They can also be costly – in the Netherlands, for example, repetitive strain injury (RSI) at work costs €2.1billon each year.
- It is estimated that **half of the European population will suffer back pain** at some time in their lives and in excess of a third of the European workforce suffer from low back pain. The costs of this back pain have been estimated to exceed €12billion. About 85 per cent of people with back pain take less than 7 days off, yet this accounts for only half of the number of working days lost by back pain. The rest is accounted for by the 15 per cent who are absent for over a month. Swedish back and neck patients on sick leave from work, for example, represent a total cost of about 7 per cent of the nation's expenditure on health services.
- Over 2.9 million people in Europe have RA, many of working age. **Every third person with RA becomes work disabled** and up to 40 per cent leave work completely within 5 years of diagnosis. Many people with RA want to stay in work but are unable to because their condition is not diagnosed or treated early enough. In the UK the National Audit Office has calculated that a 10 per cent increase in people with RA being treated within 3 months of diagnosis could result in productivity gains of £31million for the economy due to reduced sick leave and lost employment.

- People with SpA conditions such as ankylosing spondylitis (AS) are **three times as likely to be out of work** as the general population. These diseases often affect younger people and if they are not treated early, they can be lost to the labour market and be claiming benefits for decades – often needlessly.

The ***Fit for Work Europe*** study has also investigated the links between the physical and psychosocial aspects of MSDs. It has highlighted that workers with these conditions are likely to experience more prolonged work disability and find return to work after a period of absence more difficult if their psychological well-being is also poor. Research we identified also suggests that ergonomic changes to the work environment, while important, cannot be the only pillar of successful job retention and vocational rehabilitation strategies unless aspects of psychosocial health are also addressed. These aspects include job design which promotes control, task discretion, flexibility and employee involvement.

It should be noted that though not all MSDs are caused by work, workers who live with MSDs that affect their ability to work remain almost invisible to national and EU policymakers.

Early interventions make a difference

If the negative effects of MSDs on both quality of life and work disability are to be minimised then early diagnosis and treatment can often be critical. The ***Fit for Work Europe*** study has focused on the kinds of early interventions which can make the most difference to both health and labour market participation. These interventions can take place in a number of domains:

Domain	What	When
Workplace (Employers and employees)	Examples: Reasonable accommodation to work organisation, working time or job design to allow early or partial return to work (RTW)	For specified health conditions or disabilities
	Employers required to undertake RTW interview in country	After 5 days of absence
	Screening in the workplace with standardised questionnaires looking for early signs or manifestations	
	Internal health care awareness programmes	
	Internal health care education systems	
Welfare system	Examples: Welfare system allows partial work and partial benefits claims	After 10 days of incapacity
	Functional capacity assessment by occupational health specialist	After 10 days of incapacity
	Employers required to implement an early return to work plan	After 10 days of absence from work
Health care system	Examples: Early referral to physical therapy	On diagnosis
	Early access to effective drug therapies for workers with inflammatory conditions (eg DMARDs, anti-TNFs)	In cases of insufficient response to initial treatment
	Early access to cognitive behavioural therapy for selected back pain patients	After 8 weeks of work incapacity

We found a number of imaginative examples of early interventions for MSDs across Europe ranging from early access to physical therapy for workers with low back pain, through to drug treatments which put those with inflammatory conditions into remission, to cognitive behavioural therapy (CBT) with persistent wrist, neck or shoulder strain. However, we also found that – in many of the countries we studied – awareness, resources and political will are not yet at a stage where coordinated and effective early intervention is currently deliverable. The consequences of this lack of readiness may be far-reaching for workers with MSDs who want or need to retain contact with the labour market.

Successful early interventions require clinicians, employers and the health care and social welfare systems to work together. This is rarely the case, even to achieve positive clinical outcomes. It is even less common to find that job retention or return to work is the goal. And yet, through our qualitative research and our exploratory econometric analysis, the ***Fit for Work Europe*** study has found a growing body of evidence that there may be quantifiable evidence of an economic return to early interventions aimed at keeping people with MSDs in work. Indeed, we have identified that there is likely to be an early intervention 'premium', which is linked both to levels of sickness absence from work and to a reduction in premature exit from the labour market due to ill-health.

Recommendations

The ***Fit for Work Europe*** study has a number of recommendations for policymakers, employers, clinicians and other stakeholders:

1. Better data on MSDs. Both the European Commission and national governments need to collect and analyse better quality and consistent data on the prevalence, incidence and (especially early) costs of MSDs.
2. Active labour market policy must allow workers with MSDs to stay in work. This means finding the resources and implementing strategies to maximise job retention and early return to work. Core to this must be flexibility in welfare benefits which allow those with partial work disability to earn income and claim benefits.
3. Promote and enforce legislation requiring reasonable workplace accommodations for workers with MSDs. Most countries have such legislation, but it is rarely fully enforced. We know that adjusting work demands (the physical work environment, working time, psychological support etc) can make a big difference to the reintegration of people with MSDs.
4. Promote examples of good workplace preventative practice. Too many MSDs caused by work are preventable by better work organisation, job design and through ergonomic interventions. Many examples of good and effective practice exist. The European Commission and national governments should prioritise the active dissemination of good practice to support workplace prevention.
5. The EU MSD Directive should recognise pre-existing MSDs. Many workers have MSDs that are not caused by work. The forthcoming Directive should explicitly recognise that these conditions also have an effect on productivity and the quality of working life. It should also recognise that workplace interventions can support job retention, return to work and vocational rehabilitation. The Directive should also recognise the link between MSDs and mental health.

6. National governments should ensure that primary care physicians are supported in making decisions about work disability. If early intervention is to be initiated, and if return to work for people with MSDs is to be seen as a legitimate clinical outcome by family doctors, more specialist education and support is needed to ensure that opportunities to act early are not lost.
7. National governments should consider adopting a version of the UK ‘Fit Note’. This would encourage clinicians and employers to focus on the **capacity** workers with MSDs have rather than their **incapacity,** and improve the flow of information between clinicians and employers. A shift in outlook is needed here if we are to change attitudes and behaviour to incapacity.
8. National governments should prioritise access to physical and psychological therapies for workers with MSDs. The evidence is clear – if people with MSDs can gain early access to treatments and therapies that help them to stay in, or return to, work then they should be made available. Timely interventions from physiotherapists and clinical psychologists can make a significant impact on return to work, and should be prioritised.
9. National governments should implement national care plans for people with MSDs. These frameworks should include measures to promote coordination and cooperation between health and social security institutions and employers. They should also include steps to intervene early and to prioritise early return to work.
10. Health Technology Assessments (HTAs) should be allowed to take account of the wider societal benefits of treatments and therapies for MSDs. While not without its technical and philosophical issues, it is clear that treatment or therapy which can prolong the working lives of workers with MSDs may also generate benefits which are likely to accrue to the individual, their family and carers, society at large and to the wider economy, and go far beyond narrow clinical criteria.

The current burden of MSDs in Europe is considerable. Looking ahead, the intensification of work, an ageing population and rising rates of obesity are all risk factors for MSDs in the working age population for at least the next 20 years. Failure to make improvements to workplace practices, clinical interventions, social welfare provision and to important aspects of employment, health and employment policy – both at EU-level and within member states – will mean that we risk condemning another generation of European workers to vulnerable employment prospects, worklessness and a poor quality of life.

However, with timely, coordinated and focused action now we can ensure that many more of our future generation of workers in Europe are ***Fit for Work***.

1. Introduction

1.1 Why is workforce health in Europe important?

A healthy workforce means a healthy economy. Yet conventional measures to improve productivity, from investment in skills, technology and innovation to labour market deregulation, fail to take account of one of the most serious barriers to growing prosperity: poor workforce health. Despite relative prosperity in Europe, we must face up to the fact that the European workforce *may not be healthy enough* to drive the improvements in productivity required to ensure that Europe can compete with the USA and China. Indeed, in a post-recession Europe, poor worker well-being may represent a serious impediment to economic growth and competitiveness.

Employee health in Europe is becoming a hard, economic ‘factor of production’ and there is no doubt that the challenge to improve employee health in Europe has many facets:

- Cardiovascular disease has grown as the main cause of death in Europe, accounting for 4.3 million deaths each year (Allender et al., 2008).
- The prevalence of obesity has tripled in some European countries since the 1980s. Obesity is now responsible for between 2 and 8 per cent of health costs and between 10 and 13 per cent of deaths in Europe (WHO, 2008).
- Over 48 million adults in Europe live with diabetes, a condition often linked to obesity. Prevalence rates are highest in Central and Eastern Europe (eg Czech Republic has the highest rate – 7.2 per cent), and rates are set to increase across Europe as obesity levels grow and poor dietary health persists (Allender et al., 2008).
- Over 1 million men and 200,000 women die from smoking-related illnesses in Europe each year (Allender et al., 2008).
- Mental health now accounts for 20 per cent of the burden of disease in Europe. Nine of the ten countries in the world with the highest suicide rates are now in Europe (WHO, 2008).
- Over 44 million (one in six) members of the European Union (EU) workforce have a long-standing health problem or disability that affects their ability to work (Dupré and Karjalainen, 2003).
- Over 100 million European citizens suffer from chronic musculoskeletal pain (CMP) and musculoskeletal disorders (MSDs) account for a higher proportion of sickness absence from work than any other health condition (Veale, Woolf and Carr, 2008). Over 40 million workers in Europe are affected by MSDs attributable to work (Cammarota, 2005).

Much of the decline in the health of the European workforce is attributable to worsening public health, with poor diets, growing obesity, smoking and more sedentary lifestyles all playing their part. Some of the decline can also be explained by growing levels of workplace ‘stress’, work involving physical strain, job insecurity or unemployment, personal debt and family breakdown and their links to depressive illness.

Having a significant proportion of the working age population either temporarily or permanently unable to work through ill-health – even in a favourable economic climate – can reduce the aggregate level of labour productivity in an economy and damage the competitiveness and effectiveness of private and public sector employing organisations. Of course, a significant burden of ill-health or chronic disease can also have a number of damaging social consequences including poverty and worklessness. We know that worklessness has inter-generational persistence and that in the UK for example 51 per cent of those living in workless households have a long-term disability (National Audit Office, 2007).

Thanks in part to the global debate sparked by President Obama's plans to reform the US health system, health systems across Europe and Canada are being more intensely scrutinised and evaluated for their various pros and cons. Within the global economic climate, the sustainability of state-funded health systems is being questioned as part of this evaluation, but the debate potentially overlooks a major role of national health services. This is to keep workforces in good health, whether through treating existing illnesses or preventing ill-health. The impact of a country's health service on its workforce is potentially huge and so any debate about the cost-effectiveness of health services should, we argue, take this fully into account.

The health of the European workforce is, indeed, already being recognised as crucial in national and EU policy arenas. The skills, knowledge and experience of European labour have been acknowledged as key to meeting a number of national and EU objectives, including making progress towards building European nations based on a knowledge economy as envisaged in the 2000 Lisbon Strategy (Lisbon European Council, 2000). Meanwhile, the framework outlined in the European Commission's health strategy (Commission of the European Communities, 2007) focuses on the link between health and economic prosperity, and the need for an approach that takes into account values such as universality and equity and citizens' empowerment. More recently, the European Commission has suggested exploring whether GDP is the best or only measure of progress or well-being (Commission of the European Communities, 2009). In addition, a report into health and the economy in the EU produced by the Health and Consumer Protection Directorate-General (Suhrcke, McKee, Sauto Arce, Tsolva and Mortensen, 2005) underlines the 'existence of feedback loops offering the scope for mutually reinforcing improvements in health and wealth' and reinforces the need for greater investment in 'human capital' as a necessary condition for ensuring that the European economy is more competitive.

Now that the recession has taken hold and the European labour market is in decline, the imperative to maximise labour productivity and to ensure that the workforce is equipped to take full advantage of the up-turn in the economy when it arrives has intensified further. With rising unemployment, it is now even more important to ensure that those with illness or long-term and chronic conditions are not disproportionately affected, and that measures to support those out of work pay particular attention to the needs of those with an incapacity or disability. This will be especially important if the European economy is to be fit for purpose when the recession ends.

Recent attention at EU level has focused very much on the mental health problems faced by European workers (Directorate-General for Health & Consumers, 2008). This is, of course, appropriate given the increases in the prevalence of depression and anxiety reported in most member states. However, MSDs still account for the majority of working days lost through ill-health in the EU (Cammarota, 2005). Spanning over 200 conditions of the bones, joints and connective tissue, MSDs affect a great many European workers, bringing them chronic pain, fatigue, disabling inflammation of joints, severely reduced functioning, temporary but disabling incapacity and, on occasions, permanent and irreversible bone and joint damage.

1.2 MSDs: The European context

In the EU context, concern in the European Commission and among the social partners over the prevalence and impact of work-related MSDs has been growing for several years. MSDs caused by work affect more than 4 million workers in the EU and account for about half of all work-related disorders in EU countries (ETUI, 2007), representing an estimated cost to society of between 0.5 and 2 per cent of gross domestic product (GDP) (Cammarota, 2005). The European Working Conditions Survey (EWCS) published by the European Foundation has shown that 24.7 per cent of workers across the EU report suffering frequently from backache and 22.8 per cent from muscular pain (Parent-Thirion, Fernandez Macias, Hurley and Vermeylen, 2007). Indeed, the European Commission estimates that MSDs account for 49.9 per cent of all absences from work lasting 3 days or longer and for 60 per cent of permanent work incapacity (European Commission, n.d.). This report assesses where countries are doing well and where they still have challenges to confront.

1.3 Objectives of the study

The Fit for Work initiative has sought to:

1. Provide a Europe-wide and national picture of the impact of MSDs on employment and economic performance by focusing on 23 European countries, plus Israel and Canada. Reports for each country have been written and most now appear on the Fit for Work Europe website: www.fitforworkeurope.eu/research.htm.
2. Outline the early-intervention approaches that policymakers and employers can deliver to ensure that those with MSDs: a) retain their jobs b) maximise their quality of working life and contribution to society and c) maintain access to (and routes back into) employment.
3. Present recommendations for relevant European stakeholders to consider for the improved early intervention and management of MSDs

We have used the following approaches:

1. Desk research: drawing on existing published research from medical, occupational health and health economics literature we have brought together evidence on the nature, extent, impact and costs of MSDs.
2. Interrogation of secondary data sources: we have used data from national and European studies and surveys to examine the prevalence and costs of MSDs in the working age population in Europe.
3. Expert interviews: we have conducted interviews with experts across a number of disciplines to identify the main areas of policy and practice that need to be addressed. The list of the experts interviewed is available at the Fit for Work Europe website: www.fitforworkeurope.eu/research.htm
4. Data modelling: we have conducted both bivariate and multivariate analysis of data from across Europe to test whether there is evidence that early interventions to treat and manage MSDs in the working age population can bring economic and other benefits.

1.4 This report

This report focuses on the impact that MSDs are having on the European workforce and on the wider economic and social consequences. It also addresses whether better targeted – and earlier – interventions by governments, health care systems, welfare regimes, employers and workers themselves might play a decisive part in reducing the damaging impact that MSDs can have on the lives of workers and their families, on employers and on wider society. It also proposes a 'call to action', which will challenge all stakeholders to play their part in reducing the burden of MSDs in Europe

The report is structured as follows:

- Section 2 examines the extent of musculoskeletal disorders in Europe and their impact on productivity and attendance at work, on labour market participation and on the wider European economy.
- Section 3 reviews the range of interventions that can improve job retention, rehabilitation and labour market participation among those with MSDs. It also sets out an economic case for coordinated effort and early intervention to manage MSDs in Europe's working age population.
- Section 4 presents the summary results of our econometric analysis to assess whether there is a premium associated with early intervention with some MSDs.
- Section 5 sets out our recommendations for EU and national policy-makers, clinicians, employers and employees.

We begin by assessing the size, scale and impact of musculoskeletal disorders on the European workforce.

2. Work and MSDs in Europe

This section sets out what we know about the impact of MSDs on people of working age in Europe and paints a picture of the challenges faced by both current and future European workers, their families and carers, their employers and, ultimately, state agencies. It looks at the:

- prevalence of MSDs and their impact on people's ability to work
- impact that work can have on MSDs
- wider economic and social impact of MSDs in Europe.

The research concentrates on four categories of MSDs:

- work-related upper limb disorders (WRULDs)
- chronic back pain
- rheumatoid arthritis (RA)
- spondyloarthropathy (SpA).

Back pain and the majority of WRULDS are categorised as non-specific and episodic. They manifest themselves in disparate ways and may cause periods of intense discomfort and incapacity, which may affect the ability of the individual worker to carry out their work. They may also abate for long periods. Many individuals with these conditions, particularly back pain, never seek treatment and most recover on their own.

RA and SpA are specific and progressive diseases. Both are clinically diagnosed conditions that progress in a broadly predictable way. Both can have a significant impact on functional capacity at work and, in the long-term, participation in the labour market. Most individuals require clinical interventions over a prolonged period of time and the management of these conditions for those of working age should involve the active participation of the individuals themselves, clinicians, employers and occupational health professionals.

Together, these MSDs illustrate the effects of conditions that at least 40 million European workers may suffer at any one time. Improving our understanding of the effects of these conditions, and what might be done to alleviate their impact, should yield significant social and economic benefits.

2.1 A note on definitions and data availability

The lack of standardisation and validation of the terminology and classification of MSDs is one of the reasons for the contradictory findings in the literature regarding the diagnosis, epidemiology, treatment and rehabilitation of these conditions (WHO, 2003). Some clinicians differentiate between musculoskeletal conditions and musculoskeletal disorders. The former refers to all clinical conditions affecting the musculoskeletal system and the latter, to borrow a definition from the European Trades Union Institute (ETUI, 2007), means *'any affliction of the musculoskeletal system that appears at work and causes discomfort, difficulty or pain when performing work'*.

Several attempts have been made to arrive at common definitions. A recent attempt by EUROGIP in France concluded that:

> *'…comparison between countries is difficult. In particular, the lists of occupational diseases are not organized the same way from one country to another. Some Member States define very precisely the various MSD complaints recognized by them, while others list diseases by major groups, without going into detail. However, this does not mean that the former recognize more musculoskeletal disorders than the latter.'* (EUROGIP, 2007; p3)

In addition, it is difficult to quantify precisely and consistently the extent of MSDs in the working age population of Europe. The European Foundation for the Improvement of Living and Working Conditions (Eurofound) has found it hard to build a reliable or comprehensive statistical portrait of MSDs in Europe. In addition, data on the prevalence of a narrow range of MSDs from the European Working Conditions Survey (EWCS) is limited.

A noteworthy example of best practice at the country level was found in Switzerland. The government recently approved a grant of CHF12million for a 5-year National Research Programme (NRP 53) to be conducted by the Swiss National Science Foundation on musculoskeletal health and chronic pain, which will assess the status quo, prevention strategies and reintegration into work.

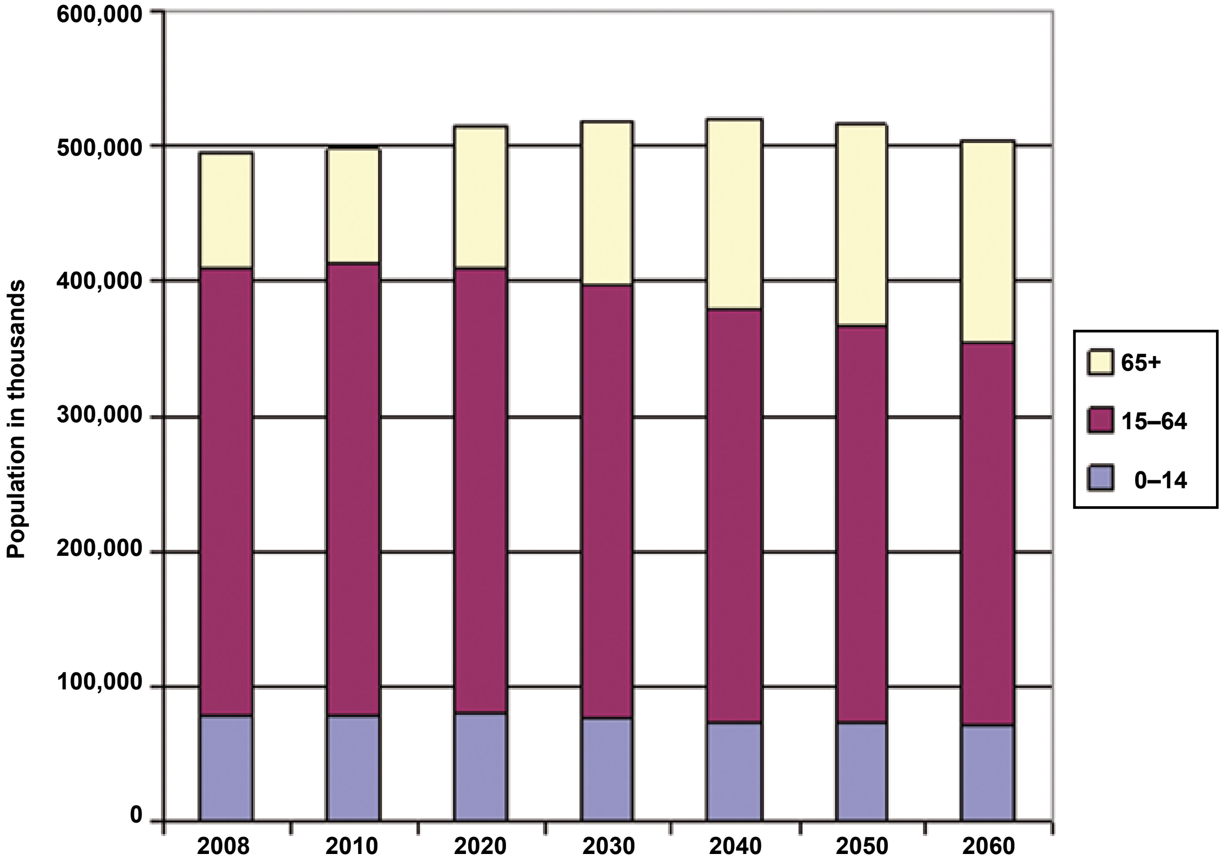
The collection of data to monitor determinants for, occurrence and impact of MSDs in all European states in a standardised manner would enable the quantification and monitoring of the scale of the problem (European Bone and Joint Decade Health Strategies Project, n.d.) and the effects of health strategies and interventions . The European Commission has recently allocated funding to a surveillance and information network to collect data on MSDs across Europe, the Eumusc project (European Musculoskeletal Conditions Surveillance and Information Network). It is hoped that this initiative will encourage greater consistency in definition and data comparability

2.2 An ageing workforce

Susceptibility to many MSDs increases with age. Across all EU member states the workforce is ageing and with it the risk of increasing MSD prevalence over the next 30 or 40 years. Figure 2.1 on the next page illustrates this effect with age profile projections for 2010 and 2050. The implication is that with the risk of acquiring an MSD increasing with age, as the profile of the workforce ages, then the impact of MSDs on work disability will intensify rather than diminish, especially if pension difficulties in many EU countries are set to extend many citizens' working lives beyond the current retirement age.

The burden of musculoskeletal disease can have significant economic and social consequences. An ageing population also means a rise in the number of people with caring responsibilities, a group also often prone to MSDs (Eurocarers, n.d.). European countries must stand ready to anticipate and manage the almost certain growth in the coming years of what some commentators have called 'an ill-understood pandemic' (ETUI, 2007).

Figure 2.1: EU-27 population projections by age group



Source: Giannakouris, 2008, citing data from Eurostat, EUROPOP2008

Throughout Europe MSDs are responsible for a substantial number of disability-adjusted life years (DALYs) and have a greater effect on sickness absence than mental health – if they are treated as separate conditions. At least 100 million people in Europe report chronic musculoskeletal pain (Veale et al., 2008). But there is also a link between MSDs and mental health (Parkes, Carnell and Farmer, 2005). Evidence is growing that the co-morbidity of these two conditions is a significant factor inhibiting early return to work. Individuals with MSDs are also likely to have depression or anxiety problems related to their conditions (Dickens, 2002). Very often national statistics or surveys only record one primary health condition. It is therefore likely that some secondary conditions may be both under-reported and, by implication, under-emphasised by policymakers.

2.3 Risk of exclusion from the labour market

In addition the economic recession is likely to make it even harder for people with MSDs to participate in the workforce. Europe is clearly in a recession. For example, the EU27 saw a drop in gross domestic product of 4.7 per cent in the first quarter of 2009 compared with the same quarter of 2008 (Eurostat, 2009b). In June 2009 unemployment rates grew in the EU27 by 0.1 per cent – to 8.9 per cent – compared with May. This represents the highest unemployment rate in the EU27 countries since June 2005 (Eurostat, 2009a). People with MSDs are at risk of becoming detached from the labour market (Bevan, Passmore and Mahdon, 2007). If steps are not taken to improve job retention or return to work then they will not be in a position to contribute to the economy when the recession ends. What's more, their health could decline further should they become long-term unemployed. Studies reveal a link between unemployment and morbidity and mortality (Bambra and Eikemo, 2008) and show that unemployment has a negative relationship with health caused partly by the loss of income associated with being out of work.

Long periods away from work are generally bad for MSD patients. The longer the sick leave, the more difficult it is to get the employee to return to work and the higher the economic cost (Frank et al., 1998; Meijer, Sluiter, Heyma, Sadiraj and Frings-Dresen, 2006). Moreover, the majority of disability inflows come from individuals on long-term sickness absence (OECD, 2009a). Data by the OECD (2009) outline the number of inflows into disability by health condition and age group across a number of European and other countries between 2000 and 2007. See Figure 2.2 on the next page. These data from a selection of countries show that inflows into disability due to MSDs frequently peak in the 50–64 age group.

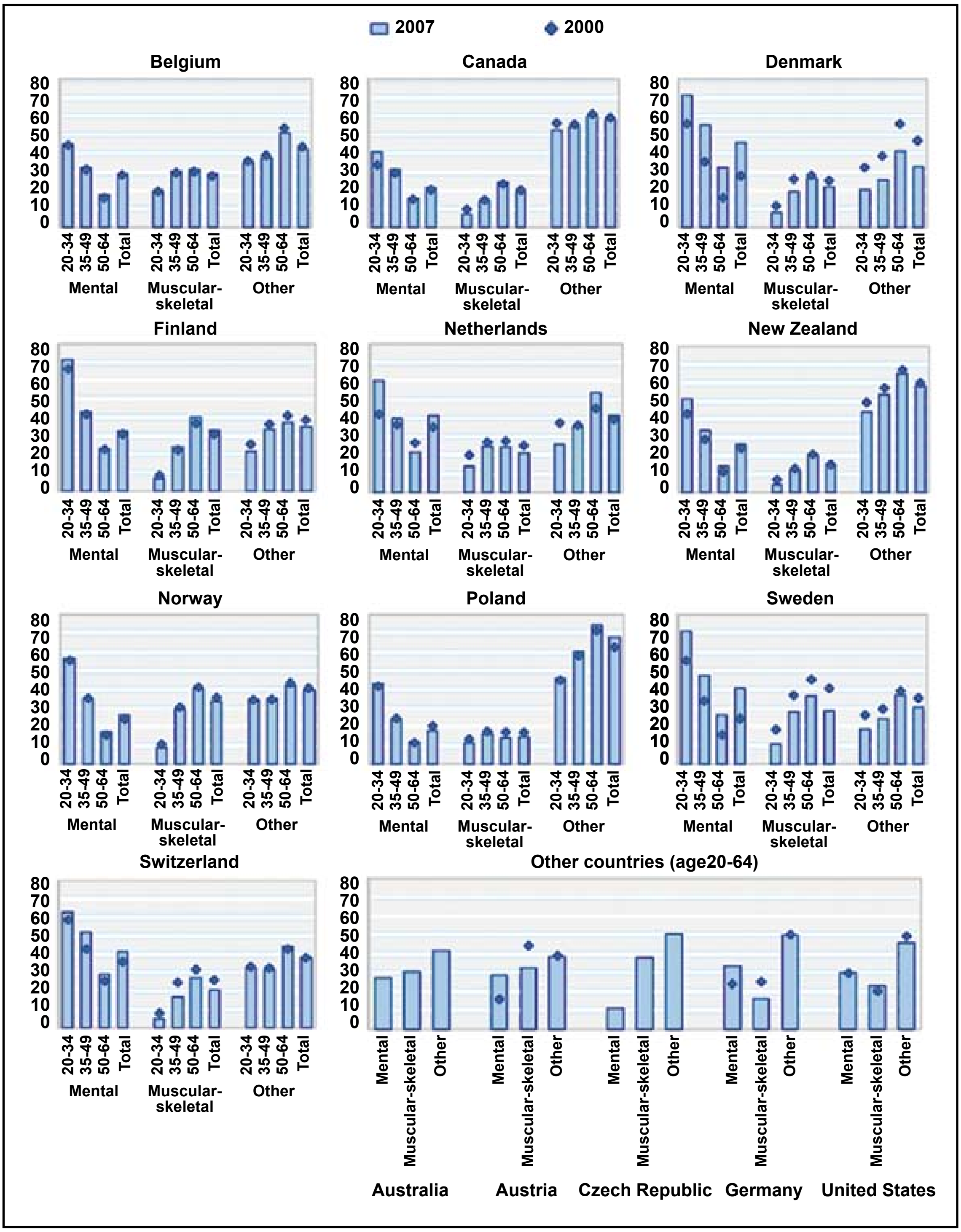
Furthermore, once individuals begin receiving disability benefits, the chances of them returning to work and finding work are low. Figure 2.3 on page 13 outlines the annual outflow from disability benefits by country. Therefore finding ways of improving job retention for these workers is vital because we know that once they become detached from the labour market their chances of finding meaningful work again are severely damaged.

2.4 The prevalence of MSDs and their impact on people's ability to work

The impact of MSDs on the individual and their ability to work varies significantly from person to person. As a result, attempts to measure the extent of work disability differ according to the methods of data collection being used, respondent selection, sick pay regulations and definitions of work disability. Work disability usually refers to cessation of employment, reduced working hours or the claiming of disability benefits. These estimates rarely include estimates of lost productivity whilst at work, which can be significant. A study by the Sainsbury Centre for Mental Health (SCMH, 2007) estimated that presenteeism (the tendency of workers to go to work when they are ill enough to stay at home) caused by mental ill-health – predominantly depression and anxiety – in the UK alone represented an annual cost of over £15billion. Indeed, the research suggests that presenteeism due to mental health costs 1.5 times more than absence.

MSDs can cause work-limiting pain and fatigue, which many people feel unable to disclose. One study suggests that chronic musculoskeletal pain (CMP) remains undiagnosed in 42 per cent of adult cases (Veale et al., 2008). Despite this, 67 per cent reported that pain caused a significant reduction in their quality of life, 49 per cent were limited in the kind of work they were able to perform and 25 per cent of adults with CMP have never seen a doctor about their pain. Other research shows that up to 30 per cent of workers with conditions such as rheumatoid arthritis (RA) are reluctant to disclose their condition to their colleagues and managers because they fear discrimination (Gignac, 2008). The stigma associated with non-disclosure may also lead to increased mental distress as well as presenteeism.

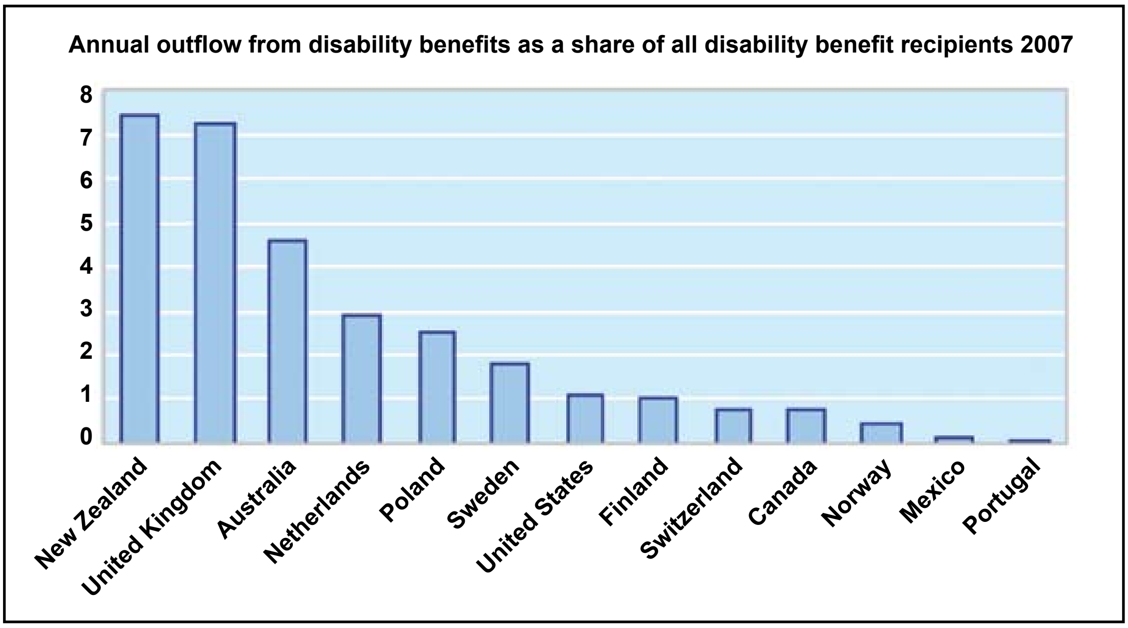
Figure 2.2: Inflows to disability by age and condition – selected OECD countries



Note: Data for Canada refer to 2001 and 2006; data for the United States refer to 2008 and (contrary to data in previous figures) do not account for the overlap in contributory and non-contributory benefit receipt.

Source: OECD, 2009a

Figure 2.3: People almost never leave longer-term sickness absence for employment



Source: OECD, 2009a

The effects of pain from MSDs can impact on the following aspects of one's performance at work:

- stamina and resilience
- cognitive capacity or concentration
- rationality/mood
- fatigue
- mobility
- agility.

2.4.1 Work-related upper limb disorders

Just over 22.8 per cent of European workers report that they have experienced muscular pain in their neck, shoulders and upper limbs (Parent-Thirion et al., 2007). Whilst no agreed classification of work-related upper limb disorders (WRULDs) exists there is a common consensus that symptoms of WRULDs can present in the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness and tingling sensations in the affected area. These conditions can be caused, or exacerbated, by work that involves repetitive movements, prolonged keyboard use, heavy lifting, poor posture or other forms of work-related physical strain.

Almost all symptoms and impacts on work associated with MSDs are associated with WRULDs. Research has investigated the links between the physical and psychosocial aspects of WRULDs (Feuerstein, Shaw, Nicholas and Huang, 2004; Burton et al., 2008). This has highlighted that workers with upper limb, neck and shoulder pain are likely to experience more prolonged work disability and find return to work after a period of absence more difficult if their psychological well-being is also poor. It also suggests that ergonomic changes to the work environment, while important, will rarely be the main pillar of a successful job retention and vocational rehabilitation strategy unless aspects of psychosocial health are also addressed, including job design which promotes control, task discretion and employee involvement. The European Working Conditions Survey (EWCS, 2005) collected self-report data from workers who attributed muscular pain in their neck, arms and shoulders to their work. These findings are presented in Figure 2.4 on the next page.

These data show considerable differences between countries. While cross-country comparisons are difficult, a handful of studies at national level have illustrated the prevalence and impact of WRULDs in European countries:

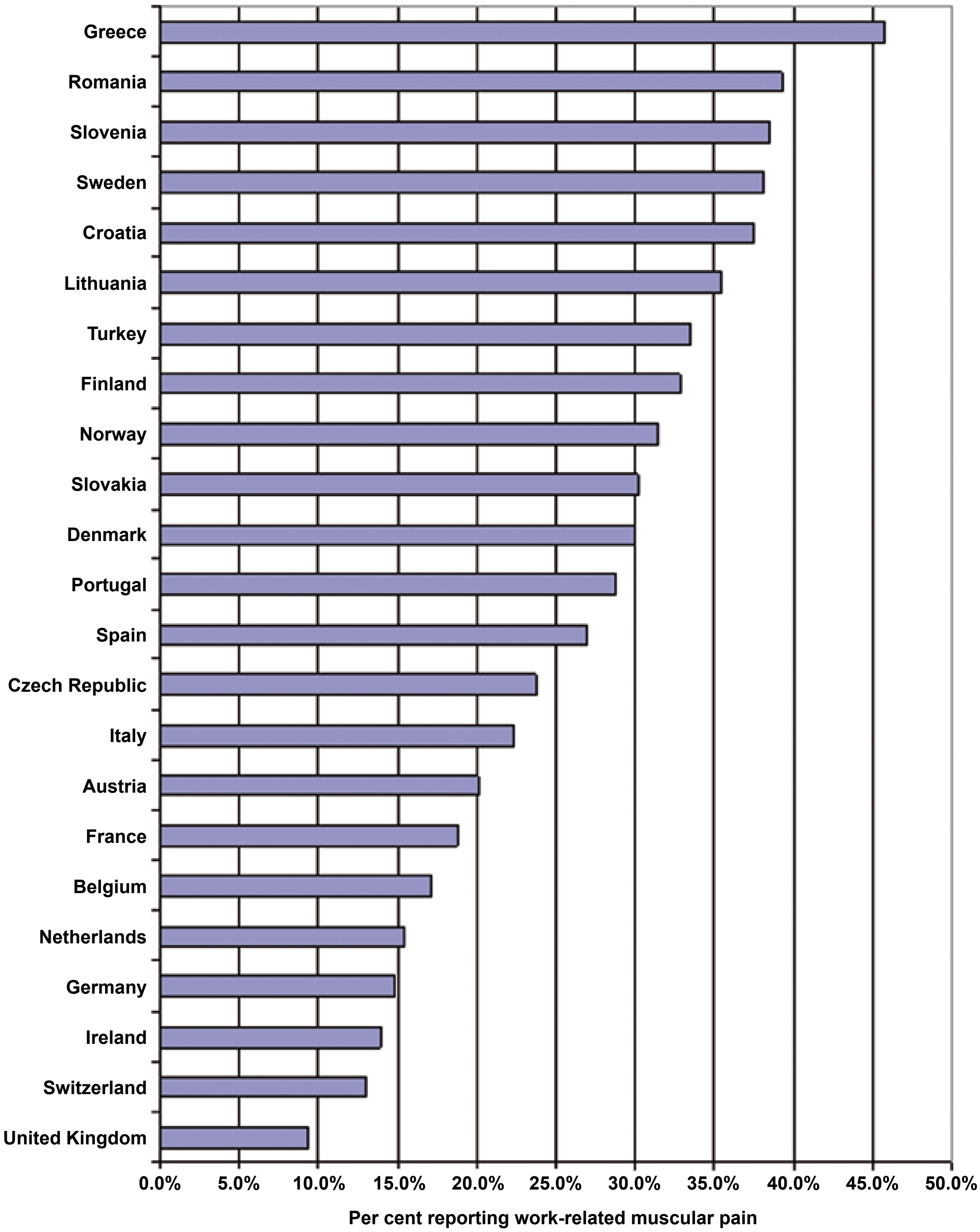
- The prevalence of repetitive strain injury (RSI) in the Netherlands stood at about 27 per cent in 2006 (Houtman, van Hooff, and Hooftman, 2007).
- Research in Belgium (Malchaire et al., 2001) has identified that although workers in Belgium are slightly less likely than other European workers to have WRULDs many of the symptoms have both a physical and psychological dimension. This can include traditional ergonomic factors such as repetitive motion, force or posture, but also includes workplace ‘stress’, control over the pace of work and job satisfaction.
- Studies in Norway have identified that 54 per cent of the workforce use a computer for at least half of the working day and that this may be associated with the relatively high prevalence of WRULDs relative to other European countries (Veiersted et al., 2006).

The research tells us that aspects of the physical work environment (eg ergonomic design) and the psychological health of the individual worker can have a decisive impact both on the degree of work disability and the ease with which a successful return to work can be achieved. It is possible that, for a proportion of workers with WRULDs, work by itself may not be the only cause of their condition.

2.4.2 Low back pain

Back pain is common, episodic, often recurrent and generally self-limiting. Recorded absence is greatest amongst the minority of sufferers whose condition is chronic – if pain lasts for more than 12 weeks – or recurrent – if there are several episodes of pain in 1 year lasting less than 6 months. Most people who are affected by back pain either remain in work or return to work promptly. About 85 per cent of people with back pain take less than 7 days off, yet this accounts for only half of the number of working days lost. The rest is accounted for by the 15 per cent who are absent for over 1 month (Bekkering et al., 2003).

Figure 2.4: Work-related muscular pain – self-reports from European workers



Source: The Work Foundation analysis of EWCS (2005) data

There is a growing consensus that psychological factors are the differentiating factor as they are strongly associated with the progression of back pain from an acute to a chronic condition that affects 2 to 7 per cent of people (Burton, 2005) and to disability (Burton, 2005; Bekkering et al., 2003).

The European Working Conditions Survey (2005) collected self-report data from workers throughout Europe on the prevalence of back pain attributable to work. Figure 2.5 on the next page shows the percentage from each country reporting any degree of work-related back pain in the year prior to the survey.

These data suggest relatively low prevalence in northern European countries, with Greece, Slovenia and Romania reporting the highest proportion of workers with back pain. In most countries there is also an industrial and occupational pattern to the prevalence of chronic back pain. Unsurprisingly, these reflect the physical nature of work and jobs that require lifting (construction, some health care occupations) or those where the risk of physical strain and poor posture is high.

Throughout Europe, studies investigating the rate of low back pain have been published at the national level.

2.4.3 Rheumatoid arthritis (RA)

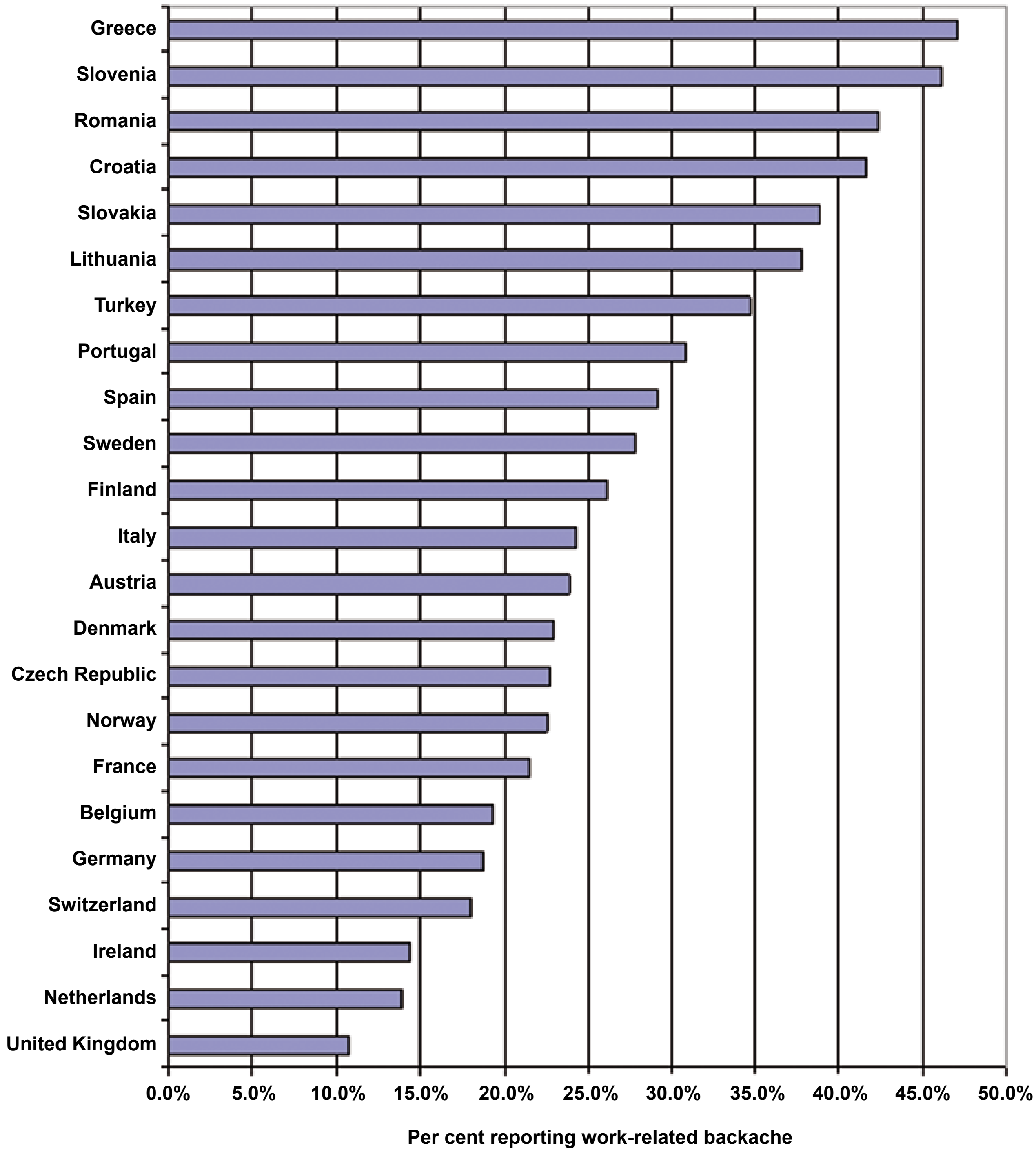
Rheumatoid arthritis (RA) is an example of a specific and progressive MSD. It is a form of inflammatory arthritis with a prevalence of between 0.3 per cent and 1 per cent in most industrialised countries (WHO, 2003). Data on the prevalence of rheumatoid arthritis derive largely from studies performed in the USA and Europe. The disease affects people of any age, although peak incidence is in the mid-age range of the working age population, ie between 25 and 55 years. Epidemiological studies have shown that RA can shorten life expectancy by around 6–10 years.

Whilst the clinical course of RA is extremely variable its features include pain, stiffness in the joints and tiredness, particularly in the morning or after periods of inactivity. It affects the synovial joints, producing pain and eventual deformity and disability. The disease can progress very rapidly, causing swelling and damaging cartilage and bone around the joints. It can affect any joint in the body, but it is often the hands, feet and wrists that are affected. RA can also affect the heart, eyes, lungs, blood and skin.

RA can go from a mild and even self-limiting form to being severe and destructive within a short time (Young, 2000). It is usually chronic (persistent) and sufferers often have ‘flares’ of intense pain, which are frequently associated with fatigue. ‘Flares’ mean that one day someone will be able to perform everyday physical activities (eg dressing) or their work duties and the next they cannot. Managing these flares in employment requires close communication and understanding between employees and employers.

Table 2.1 shows data from a more recent review (Alamanos, Voulgari and Drosos, 2005). These data illustrate a consistent finding in RA research: that prevalence is generally lower in southern European countries than in northern Europe.

Figure 2.5: Self-reported backache attributable to work, European workers



Source: The Work Foundation analysis of EWCS (2005) data

Table 2.1: RA Prevalence and incidence in Southern and Northern Europe – cases per 100 inhabitants

	Country	Prevalence Rates	Incidence Rates
North Europe	England	0.9–1.1	0.02–0.07
	Finland	0.8	0.03–0.04
	Sweden	0.5–0.9	
	Norway	0.4–0.5	0.02–0.03
	Netherlands	0.9	0.05
	Denmark	0.9	
	Ireland	0.5	
South Europe	Spain	0.5	
	France	0.6	0.01
	Italy	0.3	
	Greece	0.3–0.7	0.02
	Bulgaria	0.9	
	Yugoslavia	0.2	

Note: Prevalence is the existence of RA, and incidence is the occurrence of new RA cases

Source: Alamanos, Voulgari and Drosos 2005

The effects of the disease can therefore make it difficult to complete everyday tasks, often forcing many people to give up work. Work capacity is affected in most individuals within 5 years (WHO, 2003). One review of work productivity loss due to RA estimated that work loss was experienced by 36–85 per cent of RA sufferers in the previous year, for an average (median) of 39 days (Burton, Morrison, Maclean and Ruderman, 2006). Young et al. (2002) reported that 22 per cent of those diagnosed with RA stopped work at 5 years because of their RA. However, in some cases the condition itself is not the main or only cause of having to leave work. Indeed, Young et al. (2002) found a further group of respondents who stopped work due to a combination of RA and other factors such as depression, giving an estimate of 40 per cent of those with RA withdrawing from the workforce because of their condition. Every third new patient with RA becomes work disabled. However, people in poor countries remain working with high levels of disability and disease activity (Sokka et al., 2009).

Patient surveys also reveal the work experiences of people with RA. A survey conducted by Arthritis Ireland provides further insights into the impact of the condition on employment. In 2008 a survey of people with RA showed that 70 per cent were not able to work outside the home because of their condition and that the annual cost of lost productive time due to RA was estimated at €1.6billion (Arthritis Ireland, 2008). A second survey – this time including Irish people with other forms of arthritis – showed that 67 per cent of those who did not work or worked part-time stated it was because of their condition and that almost half had changed or left employment because of arthritis. Among those not employed, over 60 per cent were considering returning to work, though 57 per cent felt that fatigue represented their biggest barrier to returning to work. A survey in 2007 by the UK National Rheumatoid Arthritis Society (NRAS) showed that people's working lifetimes appear to be significantly curtailed because of RA. Of those surveyed who were not in employment, nearly two-thirds (229 out of 353, or 65 per cent) stated that: '*they were not in employment because they gave up work early as a result of their RA. This includes people above and below statutory retirement age. This represents 29 per cent of all respondents (229 out of 782)*'. (NRAS, 2007, p.8) Whilst a high proportion cited pain and physical limitations as factors affecting their ability to perform their duties, 11 per cent of those respondents who were employed and 17 per cent of respondents who were unemployed cited a lack of understanding or support as a barrier to job retention. The report goes on to say that:

> *Of respondents who had had to give up work early because of their RA, 13 per cent (30 out of 229) said that their employer had wanted them to leave once they became aware of the respondent having a long-term health problem.* (NRAS, 2007, p.10)

The NRAS survey also highlighted that the majority of those with RA would like to remain in work.

The picture in many other European countries supports the view that RA can have a damaging impact on the health and labour market participation of working age people:

- After 1 year of disease, 16 per cent of rheumatoid arthritis patients in Lithuania withdraw from the labour force. Almost 50 per cent withdraw after 10 years of the onset of the disease (Dadoniene, Stropuviene, Venalis and Boonen, 2004).
- In Germany, 42 per cent of female rheumatoid arthritis patients are employed, whereas 58 per cent of male rheumatoid arthritis patients are employed (18–60 year olds). Seventy-six per cent of males with rheumatoid arthritis between the ages of 18 and 40 are employed, compared with only 46 per cent of males between the ages of 51 and 60 (Zink, Listing, Klindworth and Zeidler, 2001).
- One study reports that the prevalence of RA in Greece is 0.68. The prevalence rate increased significantly as age increased up to the 50–59 year old age group. Individuals aged 50–59 years had the highest prevalence rate of 1.2 per cent (Andrianakos et al., 2006).
- Czech data reveals that the annual incidence for RA was 31 per 100,000 adults aged 16 or above. The prevalence rate of RA was shown to be 610 per 100,000 among adults aged 16 and over.[1]
- There are approximately 20,000 new cases of rheumatoid arthritis in the UK every year (Wiles et al., n.d.).

These data show that most people who acquire RA do so when they are of working age, undermining the myth that it is predominantly a condition of the retired or elderly.

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[1] Expert interview

2.4.4 Spondyloarthropathies

Spondyloarthropathies (SpA) represent a family of chronic inflammatory conditions, which include:

- ankylosing spondylitis (AS)
- reactive arthritis (ReA)/ Reiter syndrome (RS)
- psoriatic arthritis (PsA)
- spondyloarthropathy associated with inflammatory bowel disease (IBD)
- undifferentiated spondyloarthropathy (USpA).

There is little recent or comprehensive international or national data on the prevalence of SpA conditions in general although some studies have focused on specific conditions. However, recent research on the frequency of SpAs across the European population concludes that the prevalence has long been underestimated and SpAs may have a similar prevalence rate to RA (Akkoc, 2008).

Ankylosing spondylitis (AS) is a specific, progressive and chronic rheumatic disorder that mainly affects the spine, but can also affect other joints, tendons and ligaments. The mean age of onset is 26 and the majority of cases are among males. Accurate diagnosis can often be delayed as the early symptoms are frequently mistaken for sports injuries. Typical AS symptoms include pain, weight loss, fatigue, fever and night sweats, and improvement after exercise. The temporal aspects of the disease require good management to ensure that someone can perform their job and that the disease does not make work impossible.

AS is generally considered to be a disease in which those affected maintain relatively good functional capacity (Chorus, Boonen, Miedema and van der Linden, 2002). Yet reported unemployment rates are three times higher among people with AS than in the general population (Boonen et al., 2001).

Recent research has provided evidence that the physical health-related quality of life of RA and AS sufferers was positively influenced by work (Chorus, Miedema, Boonen and van der Linden, 2003). The authors' conclusion was that work '*might be an important factor in positively influencing patients' perception of their physical performance*'. This concurs with Waddell and Burton (2006a) that, overall, good quality work has health and recuperative benefits for workers.

Psoriatic arthritis (PsA) is a form of joint inflammation affecting between 10 and 20 per cent of individuals with psoriasis. When joints are inflamed they become tender, swollen and painful on movement. Tissues such as ligaments and tendons around the joints may also be involved. Inflammation of tendons or muscles (such as tennis elbow and pain around the heel) are also features in those with psoriatic arthropathy. In approximately 80 per cent of cases the arthritis develops after the appearance of psoriasis. There are several features that distinguish PsA from other forms of arthritis: one pattern of inflammation is usually in the end of finger joints; another is involvement of the joints of the spine and sacroiliac joints, which is called spondylitis (similar to AS). Neck pain and stiffness can occur or an entire toe or finger can become swollen or inflamed (dactylitis). There can also be a tendency for joints to stiffen up and sometimes to fuse together. The absence of rheumatoid factor in the blood helps distinguish psoriatic arthritis from rheumatoid arthritis. The condition can develop in the teenage years though can also affect people of working age. In women there may be an increased incidence following pregnancy or the menopause. Recent and reliable prevalence data for PsA in Europe is difficult to find, though a review by Cimmino (2007) suggested that its prevalence could be as high as 0.42 per cent.

2.5 The impact of the workplace on MSDs

The risk factors for MSDs are wide ranging. Whilst there is broad consensus among experts that work may be a risk factor for MSDs, non-work activities such as sport and housework can contribute to musculoskeletal strain. Some studies, for example, have noted that a higher prevalence of musculoskeletal pain among working women may be linked to the fact that women are responsible for doing the majority of housework (Punnett and Wegman, 2004). In addition, caring responsibilities can also increase the risk of MSDs; carers frequently report back, neck and shoulder problems associated with lifting, washing and bathing activities (Eurocarers, n.d.). Intrinsic risk factors also have a part to play in the onset and deterioration of MSDs. Some intrinsic factors can be altered, others, such as genetic predisposition, cannot. Table 2.2 summarises the intrinsic risk factors for non-specific MSDs.

Table 2.2: Summary of intrinsic risk factors for non-specific MSDs

Intrinsic factors
• Obesity, height • Spinal abnormalities • Genetic predisposition • Pregnancy • Psychosocial stress: self-perception • Health beliefs: locus of control, self-efficacy, perception of disability and expectation • Family stress • Psychological stress: somatisation, anxiety and depression • Ageing

Source: adapted from WHO, 2003

In terms of evidence and risk factors for the impact of work on MSDs a distinction needs to be made between ‘work-related’ disorders and ‘occupational’ disorders (Punnett and Wegman, 2004). Certain MSDs are recognised as occupational diseases by some European governments, such as wrist tenosynovitis, epicondylitis of the elbow, Raynaud's syndrome or vibration white finger and carpal tunnel syndrome (Eurostat, 2004). As such, the fact that work can cause and contribute to these conditions is widely recognised and the use of workplace risk assessments to reduce the incidence of these conditions is well established.

The evidence linking other non-occupational MSDs and work is not conclusive and attributing cause and effect between specific aspects of work and particular parts of the body is difficult. However, many of the established risk factors that may contribute to the development of non-specific musculoskeletal conditions can be encountered at work; even if work does not cause a condition, it may aggravate it. Moreover, if we consider risk factors beyond the physical, then the impact of the workplace on MSDs is likely to be much greater. The most frequently cited risk factors for MSDs encountered in the workplace include the following:

- rapid work pace and repetitive motion patterns
- heavy lifting and forceful manual exertions
- non-neutral body postures (dynamic or static), frequent bending and twisting
- mechanical pressure concentrations
- segmental or whole body vibrations
- local or whole-body exposure to cold
- insufficient recovery time (Punnett and Wegman, 2004).

Many jobs involve activities that can constitute a risk factor for MSDs. According to the European Working Conditions Survey: 17 per cent of European workers report being exposed to vibrations from hand tools or machinery for at least half of their working time; 33 per cent are exposed to painful or tiring positions for the same period; 23 per cent to carrying or moving heavy loads; 46 per cent to repeated hand or arm movements and 31 per cent work with a computer (Parent-Thirion, Fernández Macías, Hurley and Vermeylen, 2007).

The European Agency for Safety and Health at Work (ECOSH, 2000) indicates that the following industry sectors have the highest rates of WRULDs across Europe:

- agriculture, forestry and fishing
- manufacturing
- construction
- wholesale and retail
- hotel and catering.

Similarly, ECOSH highlights the following high-risk occupations:

- manual and craft workers
- machine operators
- secretaries and typists
- packers.

Much of the attention that employers pay to MSDs and the impact of the workplace on their onset or deterioration is driven by a concern to avoid or limit litigation and ensure that they are fulfilling their duty of care, by performing workstation assessments and giving guidance on manual handling for example. However, this neglects a wider issue that other work-associated factors can also contribute to MSDs. These aspects are often missed out in the literature and advice on dealing with health and safety. Even where ‘stress’ is mentioned, the connection between psychosocial factors and physical conditions is omitted, reinforcing the primary focus on safety (Parkes et al., 2005).

Generally there is an increased risk of injury when any of the physical risk factors mentioned above are combined, or adverse psychosocial factors, personal or occupational, are present (Devereux, Rydstedt, Kelly, Weston, and Buckle, 2004). Psychological and organisational factors can also combine with physical factors to influence the probability that someone with a MSD will leave work prematurely. For example, Sokka and Pincus (2001) reviewed 15 studies and showed that physically demanding work, a lack of autonomy, higher levels of pain, lower functional status and lower educational levels were predictors of an RA sufferer leaving work early. This highlights that it is not only the physical elements of work that can influence someone’s functional work capacity and likelihood of staying in the labour market, but also the psychosocial and organisational factors. These include:

- rapid work pace or intensified workload
- perceived monotonous work
- low job satisfaction
- low decision latitude/low job control
- low social support
- and job stress.

Job stress is a broad term and can result from a variety of sources such as high job demands, a mismatch between skills and job requirements, or abuse or violence at work. While job stress might lead to lost productivity, it may also lead to MSDs caused by tension or strain. An increased probability of experiencing a high level of pain has also been associated with low social support, low social anchorage or low social participation (Katz, 2002). ‘Good work’ and the provision of high-quality jobs is therefore crucial (Coats and Max, 2005; Coats and Lehki, 2008).

2.6 MSDs not caused by work

While the majority of MSD cases in the European working age population are likely to be substantially caused by work, the Fit for Work research has also highlighted that a significant minority are affected by MSDs that are not caused by work, but which affect their ability to work and play a full part in society. These include inflammatory diseases of the bones and joints. Moreover, workers with these conditions are rarely captured by national statistics or EU-wide surveys, so remain largely invisible to policymakers in national governments and in the European Commission.

One of the consequences of this is that the labour market participation and productivity of workers with inflammatory diseases are, in effect, discounted. Similarly, policies and practices aimed at maximising job retention and return to work (RTW) among these workers are not prioritised. In this instance it may be that the historic split between employment policy and health policy works against the interests of those with inflammatory diseases seeking support to enter or remain in the workforce. Health and safety interventions typically target only those accidents and injuries directly caused by the workplace, not longer-term conditions. Health service workers who understand the characteristics of these diseases are not likely to share knowledge systematically with employers that could enable employers to make adaptations or allowances for their workers. At the national/European level policy-making structures are similarly usually separate, with few incentives and little budgetary flexibility for joint-working towards the shared aim of better employee health.

2.7 The wider economic and social impact of MSDs

The effect that MSDs can have on an individual’s ability to work and the time they may require to be absent from work means that MSDs have significant associated costs to individuals, families, carers, employers and the wider economy. Calculating the exact costs is not straightforward. Several factors need to be considered and obtaining accurate, reliable and consistent figures is a challenging task. For example, welfare payments (eg incapacity benefit) are transfer payments. They move resources across the economy, but do not consume resources. They need to be treated separately when calculating the total costs of interventions. However, existing figures on the economic impact of MSDs based on conservative approximations show that MSDs are a significant economic burden to most European countries.

To calculate the cost of MSDs (or any illness) the following factors must be estimated:

- **Direct costs** (including medical expenditure, such as the cost of prevention, detection, treatment, rehabilitation, long-term care and ongoing medical and private expenditure).
- **Indirect costs** (including lost work output attributable to a reduced capacity for activity, such as lost productivity, lost earnings, lost opportunities for family members, lost earnings of family members).
- **Intangible costs** (including for example the psychosocial burden caused by job stress, economic hardship, family stress and suffering induced by health problems resulting in reduced quality of life) (WHO, 2003).

These costs vary considerably depending on the condition, on the severity of the symptoms, and whether these cause short- or long-term absence or disability. Moreover, they vary depending on the particular methods used to calculate them. Some factors that affect the calculations include the following:

- perspective of the analysis, including whether all societal costs are included or just publicly-funded costs
- severity of patients' conditions in a study
- mix of patient demographics in a study
- calculation method, for example bottom-up or top-down costing and for productivity losses
- definitions of work disability
- baseline year and setting of a study
- change in health care financing systems
- incidence- or prevalence-based estimates of costs.

Intangible costs are rarely included in cost calculations as it is not possible to express properly the intangible costs in monetary terms (Sieper, Braun, Rudwaleit, Boonen and Zink, 2002). However, the evaluation of intangible costs gives useful information regarding the price paid by people with MSDs in terms of quality of life, and quality of life measures should be used as further indicators to measure the effectiveness of interventions (Leardini, Salaffi, Montanelli, Gerzeli and Canesi, 2002).

2.7.1 Direct costs

As mentioned above, cost-of-illness estimates require input from a number of different factors, and great variation is found across different studies. For low back pain, the most significant direct costs are related to physical therapy, inpatient services, drugs and primary care (Dagenais, Caro and Haldeman, 2008). Nachemson, Waddell and Norlund (2000) calculated that some 80 per cent of health care costs are generated by the 10 per cent of those with chronic back pain and disability. For RA, although direct health care costs have been relatively small in the past (Lundkvist, Kastäng and Kobelt, 2008), a number of studies indicate that direct costs increase as functional capacity decreases, making functional capacity a major cost driver (Huscher, Merkesdal, Thiele, Schneider and Zink, 2006; Kobelt, 2007; Leardini et al., 2002).

Calculations of the costs of treatment tend to evaluate the clinical costs and benefits. The wider impact of sufferers remaining in work or returning to work early extends to the biopsychosocial and economic effects to the individual of being in work and to the reduced costs to governments. They may also not include the private costs to individuals, such as transport, and out-of-pocket payments towards the cost of their treatment. Taking a wider joined-up approach to an analysis of treatment costs for illness in general and MSDs in particular may provide a different and perhaps more realistic assessment of the overall costs of treatments.

2.7.2 Indirect costs

There are two main types of indirect costs most commonly measured in association with ill-health in employees. These are absence from work and what is termed presenteeism, or loss of productivity in an employee while they are at work with an illness or incapacity. Presenteeism is extremely difficult to measure reliably. As a result, most estimates of indirect costs are based on absence data. However, it is worth noting some of the limitations of data collected on absence from work. The recording of sickness absence is rarely accurate. Different organisations have different ways of recording absence: in some cases employees complete records themselves, in other cases managers must record the absence for them. Self-report surveys ask individual employees to complete the survey with respect to a particular reference time. Each method has limitations. For example, with the self-reported surveys, employees might report sickness on days when they were not due to work anyway. With employer surveys the responses are limited by the quality of the absence records employers keep. Employer surveys are also subject to response biases where only organisations with good methods to measure absence are likely to be able to respond quickly to the survey request. In all cases records and reports are subject to biases.

The available cost figures still underestimate the true cost of conditions such as MSDs. Most people with MSDs do not become disabled. In fact, whilst there is a relatively high background prevalence of MSDs, most people (even those with diagnosed conditions) continue to work (Waddell and Burton, 2006a). For back pain, Nachemson et al. (2000) calculated that some 80 per cent of health care costs are generated by the 10 per cent of those with chronic pain and disability. However, there are still potentially significant costs associated with lost productivity where people remain at work, but in pain or distress, while awaiting intervention or workplace adjustments.

The indirect costs of ill-health extend beyond the lost productivity of the individual, often impacting on labour participation of family members (Pugner, Scott, Holmes and Hieke, 2000; Brouwer et al., 2004). According to one paper (McDaid and Watt, 2004), the costs of lost employment and informal caring costs can in fact more than outweigh the direct health care costs. One UK study in 1996 revealed that these indirect costs accounted for 52 per cent of total costs (European Bone and Joint Health Strategies Project, 2004). Our research has found that indirect costs are not explicitly accounted for at all in some European countries (eg Turkey). While this is often attributable to an acknowledged difficulty in collecting comprehensive and reliable data, it also risks severely underestimating the total costs of MSDs to wider society (Merkesdal, Ruof, Mittendorf, Zeidler and Mau, 2002).

2.7.3 Total costs

The cost calculations for MSDs in general provide relatively good estimations of the costs of non-specific MSDs given that non-specific MSDs constitute the vast majority of cases. Calculating the costs for specific MSDs is fraught with the same difficulties as for MSDs as a whole. The majority of studies estimating the economic burden of RA have provided cost estimates specific to the US population and health care system (Cooper, 2000). The cost of AS to society is less well established (Chorus et al., 2002). Findings across countries with respect to work disability rates are generally not directly comparable given the differences in working terms and conditions, such as the length and conditions of statutory sick pay (Sieper et al., 2002).

The limitations of data collection highlight some of the difficulties encountered in trying to cost the impact of MSDs for employers and society. However, Lundkvist et al. (2008) estimated that the total cost of treating RA patients in Europe was €13,000 per patient, or €45billion. These costs included medical costs, drug costs, non-medical costs, the costs of informal care and other indirect costs. These figures are slightly higher, per patient, than those for other Western European countries. Table 2.3 provides a snapshot of national data on costs.

Table 2.3: Some national data on the costs of MSDs

Some national data on costs
• In the Netherlands it is estimated that work-related repetitive strain injury (RSI) costs a total of €2.1billion each year (Douwes, 2007). Of this, €808million is attributed to productivity loss. • Studies of Swedish back and neck patients on sick leave have shown that the total cost to health services (including costs for the relatively few who receive surgery) is about 7 per cent of the total cost of health services (Hansson, Hansson and Johnsson, 2006). • In the Czech Republic in 2007, the cost of an average duration of stay in hospital for people with diseases of the musculoskeletal system and connective tissue amounts to CZK31,623 (€1,243), based on the average cost of a 1-day stay in hospital of CZK3,810 (€150) (Institute of Health Information and Statistics of the Czech Republic, 2008). • The annual impact of RA on Spanish society could be more than $2billion (Lajas et al., 2003). Low back pain costs Spanish Social Security €66million. (Expert interview). • The cost to the UK of musculoskeletal conditions is £5.7billion annually (Health and Safety Executive, 1999). • Work by Boonen (2006) focusing on 3 countries, estimated that the total annual costs of AS per patient in 2003 was $11,843 (compared with $7,243 in the USA) and that 72 per cent of these costs were indirect costs. • Early RA can result in a substantial loss in productivity. In a 5-year study in Finland (Puolakka et al., 2006) lost productivity per patient-year averaged €7,217 (€6,477 for women and €8,443 for men). • A study by Dagenais et al. (1998) estimated that the total annual costs of low back pain in Europe was £12.3billion in 1998 and that 87 per cent of these costs were indirect.

2.8 Summary

The quality and quantity of data on the definition, prevalence, impact and costs of MSDs vary considerably between countries, making it difficult to arrive at a definitive and authoritative European overview. Nonetheless, we know enough to conclude that musculoskeletal pain is widespread in Europe's working age population and that MSDs remain the single biggest cause of absence from work.

Whilst there are many intrinsic risk factors for MSDs it is clear that the workplace has the potential to expose employees to other risk factors, both physical and psychosocial. Some of the well-established workplace risk factors are already recognised by many employers and assessed to minimise their impact. However, the impact of other workplace risk factors, such as job quality, are not as widely understood.

Not all MSDs are caused by work, and workers with inflammatory and other conditions who live with work disability remain almost invisible to national and EU policymakers. As poorly-managed working conditions can have a damaging effect on workers with these conditions, the same principles of prevention, ergonomic design, flexibility of working time, work adjustments and rehabilitation should also apply.

It is also important to distinguish between risk factors for the onset of MSDs and risk factors for chronic illness and disability. Whilst the physical conditions of work may cause or aggravate musculoskeletal symptoms, the impact or outcome on individuals (absence from work and disability) is strongly associated with psychosocial factors (Waddell and Burton, 2006). Work can help ameliorate the deterioration of conditions (Breen, Langworthy and Bagust, 2005) and assist recovery from MSDs, where appropriate (Feuerstein et al., 2003; Chorus et al., 2003). This has implications for the development of strategies and interventions to ensure that those with MSDs are enabled to enjoy full and productive working lives.

3. Interventions – is early also better?

3.1 Context

As we have seen MSDs have a significant impact on the labour market and are the biggest workforce health problem in many of them. Within the EU, MSDs are the single most common cause of early retirement and disability payments (Lidgren et al., n.d.). In times of economic downturn, it is important to ensure that those with chronic illness or long-term conditions are not disproportionately affected and that measures to support those out of work pay particular attention to the needs of those with an incapacity or disability.

The primary focus of this section is to examine the interventions that affect job retention, labour market participation and job quality among those with MSDs. We look at the barriers to intervention from the perspective of different stakeholders. While there are different approaches in different countries, there was one recurring theme in our research: in order to address the productivity gap and to have a productive workforce across the entire range of the working age population, all stakeholders need to work together to ensure that people are fit for work.

To achieve this it is important that all those involved – people with MSDs, health care professionals, governments, employers and employees – join up their thinking to maximise the individual's fitness for work. Finally, we look at the current evidence of the economic benefits of interventions to treat MSDs and discuss and test the value of early intervention.

3.2 Early Intervention

One of the common themes throughout our research has been evidence from country experts and from literature of the often long delays that workers with MSDs experience between the onset of their condition and their subsequent access to diagnosis, treatment, therapy and other forms of support. Some of this delay can be accounted for by self-stigma among workers themselves which can mean they fear disclosure of their condition to clinicians, employers and even to their families. The majority can be explained by other factors, however – often centred on the healthcare and welfare systems or by employer practices.

Expert commentators from around Europe told us that earlier diagnosis followed by appropriately early intervention would in many cases, prevent the MSD from getting worse and would enable the worker either to stay in work or to return to work as soon as possible, albeit in a partial or phased way. Yet we have found that in most of the countries we have studied, early intervention is neither a policy nor a clinical priority.

Where early intervention **is** recognised as having potential benefit, it is often the case that the healthcare system or the welfare system (and often both) are not resourced or required to prioritise the kinds of early interventions which, in some cases, are likely to be easy and inexpensive to administer and can have both clinical and work-related benefits.

It is also clear that where clinical research is being conducted on early interventions and work disability – still relatively rarely – the results suggest that there can be economic and productivity benefits too.

However, definitions of early interventions vary. In addition, in assessing any benefits it is clear to us that the costs of the intervention itself must also be taken fully into account before drawing any conclusions about its economic value. Nonetheless, early intervention with MSDs among working age people as a principle makes intuitive sense, and the Fit for Work study has focused attention on examining whether there is a more solid case that can be made for it.

3.3 Models of early intervention

There is considerable diversity in what constitutes early intervention across the countries included in the research we have conducted. There is diversity in terms of what constitutes the intervention, which part of the system may provide it (or co ordinate with others to provide it) and diversity in the time at which it is both appropriate and likely to optimise the impact of intervention. As an illustration, Table 3.1 below provides examples of early interventions.

Table 3.1: Illustrations of early intervention

Domain	What	When
Workplace (Employers and employees)	Examples:	
	Reasonable accommodation for work organisation, working time or job design to allow early or partial return to work	For specified health conditions or disabilities
	Employers required to undertake return-to-work (RTW) interview in country	After 5 days of absence
	Screening in the workplace with standardised questionnaires looking for early signs or manifestations	
	Internal healthcare awareness programmes Internal healthcare education systems	
Welfare system	Examples:	
	Welfare system allows partial work and partial benefits claims	After 10 days of incapacity
	Functional capacity assessment by occupational health specialist	After 10 days of incapacity
	Employers required to implement an early return to work plan	After 10 days of absence from work
Healthcare system	Examples:	
	Early referral to physical therapy	On diagnosis
	Early access to effective drug therapies for workers with inflammatory conditions eg disease-modifying antirheumatic drugs (DMARDs), anti-TNFs)	In cases of insufficient response to initinatural treatment
	Early access to cognitive behavioural therapy for selected back pain patients	After 8 weeks of work incapacity

While these are only examples, it is clear that interventions can focus on a range of domains. It might be argued, of course, that interventions, which span more than one domain, might be more likely to have a sustained impact as a result of joined-up cross-agency effort.

There are also likely to be a number of enablers and barriers to the delivery of early intervention – some of these are set out and discussed in Table 3.2 below.

Table 3.2: Factors which may influence delivery of early intervention

Domain	Components	Why it may be important to enable/inhibit early intervention
Work place (Employers and employees)	Legislation	Requirements for RTW interviews and work modification could encourage early RTW
	Guidelines/education	Examples of good practice in vocational rehabilitation
Welfare system	Access to the welfare system	Eligibility for the welfare system could reduce access to welfare early interventions
	Access to specialist advice	Appropriate interventions may require specialist knowledge (eg knowledge of the specific job demands; occupational health)
	Access to specific interventions (eg RTW co-ordinators)	Availability of appropriate intervention is linked to the approach of the system to setting priorities and funding interventions
	Incentive properties	Early intervention such as partial work can be disincentivised when any return to work leads to complete removal of welfare payments
Healthcare system	Access to the health care system	Long waiting lists and/or high cost could reduce access to appropriate care
	Access to specialists (or GPs in more rural areas)	Appropriate diagnosis and treatment may require specialist knowledge and sufficient numbers of specialists to meet demand
	Access to specific interventions (eg medicines, physiotherapy)	Availability of appropriate treatment is linked to the system's approach to setting priorities and funding interventions
	Guidelines/education of clinicians	Knowledge transfer from research on early interventions may be encouraged by the availability of guidelines on appropriate treatment

In addition the evidence base in terms of both the scale of MSDs (their incidence and prevalence) their impact (upon the employee, employers, carers, the health care system and the welfare system) and the costs and benefits of early intervention are also likely to be crucial to the delivery of early intervention.

3.4 Data quality and consistency

As mentioned earlier, better data on MSDs is needed. Many of the experts we interviewed for the individual country studies were critical of the lack of data on the extent and burden of MSDs in their respective countries. To inform a public debate and to set numbers from various countries in perspective we extracted information from international databases and developed a benchmarking grid that is contained in Appendix C. We have examined a variety of indicators covering the:

- labour market
- welfare system
- healthcare system.

By underestimating the political salience of MSDs based on incomplete/deficient data, policy-makers run the risk of:

- lacking an understanding of the importance of early intervention to counteract high levels of work disability, work-related incapacity and unemployment among people with MSDs
- limiting resources for these indications
- misrepresenting MSDs in major public policy programmes
- distorting workforce planning
- misdirecting of medical expertise and continuous medical education.

These issues were reflected upon in a 2004 editorial on the burden of MSDs in Europe where Professor Josef Smolen stated that:

> *Although musculoskeletal diseases strike more frequently, and are more severe and more costly than conditions of any other system, people with arthritis have to fight harder for access to the best care, even if it improves quality of life and prevents sick leave and disability, (Smolen, 2004, p.329)*

He went on to address the difficulty scientists studying musculoskeletal conditions (MSCs) have in finding funding and support for their research on interventions, because '*MSCs are not regarded as 'major diseases' by our European authorities'* (Smolen, 2004).

We have found that in most countries social security institutions do not disaggregate their data on prevalence, sickness absence days or costs by disease category. This makes comparison and trend analysis difficult. In addition, some countries only include absence from work after an initial qualifying period (eg 9 or 14 days). This means that absences attributable to MSDs are often under-reported

3.5 MSDs and healthcare professionals – education, diagnosis and treatment

Despite the fact that one in three physician visits are caused by MSDs, the awareness among health care professionals about the scale and impact of MSDs and of the options for their prevention and treatment is moderate. Medical students across Europe spend a very small proportion of their time learning about occupational health, whilst musculoskeletal training for GPs has been found lacking (Akesson, Dreinhofer and Woolf, 2003).

Many health care professionals do not address work-related topics with their MSD patients. In addition, many GPs feel uncomfortable or incompetent when asked to assess workability (Arrelov et al., 2007; Swartling, Hagberg, Alexanderson and Wahlstrom, 2007). As a consequence, many health care professionals make return-to-work judgements without having a very clear view of the demands of the job, the extent to which adjustments to the job can be made or, indeed, whether a swift and appropriate return to work might have psychological (and economic) benefits. Some GPs still assert that this is not, and should not be, part of their role.

Stronger cooperation with occupational health professionals is desirable and likely to have a tremendous impact on workers with MSDs. Lessons learned from integrated care models in other indications could be applied here. One example of an intervention to assist with reintegration comes from Belgium – please see Box below.

Country case study: Belgium
Intro_DM – Reintegration of workers with long-standing health problems

While employers, clinicians and state agencies are frequently aware of the benefits of work for people with long-standing health conditions, more often than not, the lack of coordination between the different actors involved in the reintegration process results in missed opportunities, lost skills, long-term unemployment and social exclusion.

To address and improve this situation the Intro_DM partnership has been developing two new job profiles to support reintegration in the Belgian workplace: the Disability Manager (DM) for implementing and overseeing disability management policy within companies, and the Disability Case Manager (DCM) to offer individual support within the reintegration process.

Each of the partnership's lead partners already has the relevant experience required to develop these new roles. Prevent, a Belgian multidisciplinary institute working on the prevention of occupational risks by promoting quality in working conditions and improvements in work organisation, is a specialist providing support, advice and information to companies, institutions and other social actors. UCBO-University Ghent is a vocational training and coaching centre for people with disabilities, which has an extensive record of assisting individuals with the integration process through individual coaching and training.

In October 2006, the project started the first disability training programme and the courses have recently produced their first graduates: nine DMs and 17 DCMs. One of these graduates, Lieve Caers, a human resources manager in the Antwerp region working for the Flemish Public Employment Service (VDAB) says of the training:

> *Disability is one of the issues of our interest and so is the absenteeism in our organisation. This training will help us to manage it. It is important and interesting to see how we can do something about it, as it offers us useful tips and structures that we can transpose in our organisations.*

Marthe Verjans of Prevent confirms this problem:

> *It is a significant problem in Belgium that there is no proactive and systematic approach in terms of reintegration within companies. Human resources managers' focus ends with dealing with absenteeism. Actions towards reintegration are only ad hoc. However, establishing the rules for dealing with absenteeism is the first step towards structures for reintegration.*

Cont.

Cont.

Line managers are often not trained to see the reintegration situation from the HR point of view, but rather focus on the immediate requirement to deliver business results. As a result, they may hastily dismiss an employee with disability or long-standing health problem (LSHP) as unfit for the job without considering the particular skills this employee may bring to the company if the 'disabling' factors like inaccessible working space and the negative attitudes of other workers are removed. The practical examples provided by the instructors from companies such as Volvo provided the participants with particular approaches to managing disability and should also help them to assume the role of DMs by guiding the introduction and implementation of a reintegration policy within their businesses.

The training provided for the DCMs was similarly successful. DCMs were offered a training package with relevant tools and knowledge that will enable them to support employees returning to the workplace. The DCM coordinates the reintegration process among the different parties involved and informs individuals of the available support services and relevant legislation. To improve the programme, 50 reintegration cases were also monitored and analysed, which helped refine the methodology put into practice and discover the best possible reintegration processes, which can serve as a model for others.

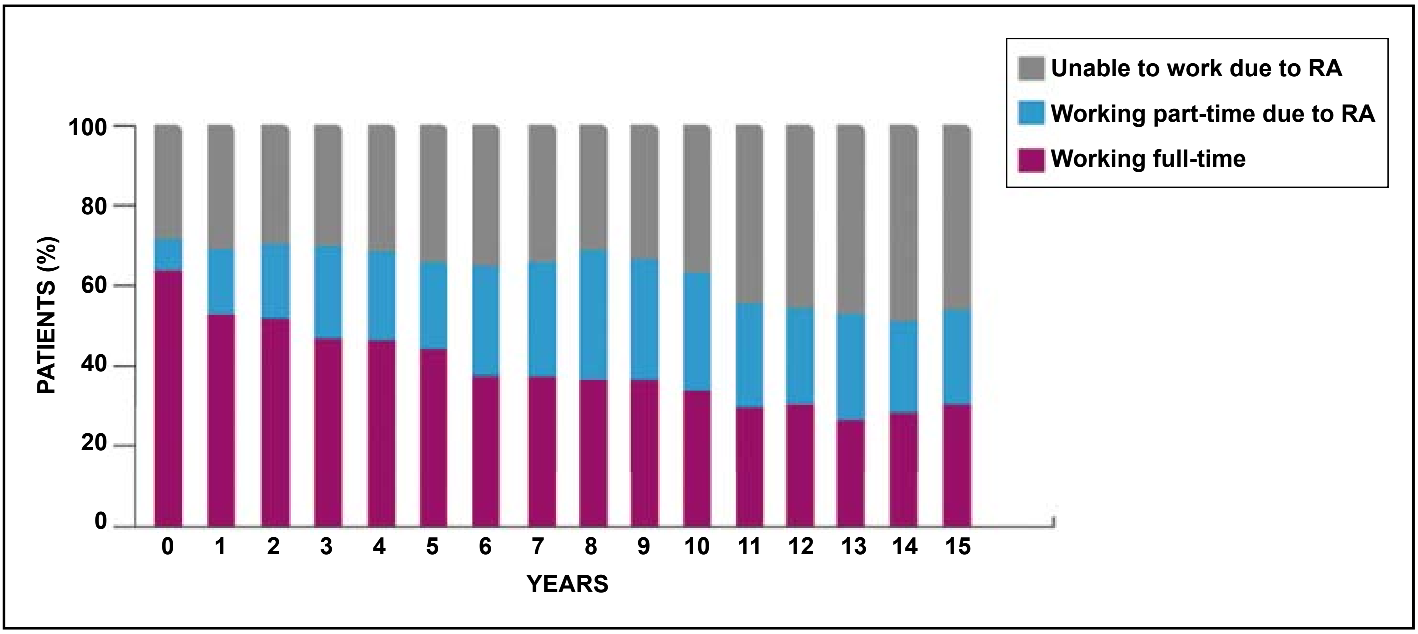
Evidence suggests that work can help ameliorate the deterioration of conditions (Breen, Langworthy and Bagust, 2005) and assist recovery from MSDs where appropriate (Feuerstein et al., 2003; Chorus et al., 2003). In contrast, sick leave has been shown to have a negative psychological impact on employees (Meijer et al., 2005). These findings have to be recognised by health care professionals as they have implications for the development of strategies and interventions to ensure that those with MSDs are enabled to enjoy full and productive working lives, thereby reducing the costs associated with MSDs.

Yet, a patient's ability to work has yet to be accepted as a clinical outcome by many medical professionals and reimbursement authorities. Frank and Chamberlain (2006) have concerns that return to work is not seen by a sufficient proportion of clinicians as a valued outcome for the patient. Much needs to be done to make health care professionals aware of the link between MSDs and the high probability of work disability. There still seems to be a lack of coherence or joined-up thinking and action that focuses on the MSD patient as a worker too.

Job retention and return-to-work programmes are contingent on patients receiving appropriate medical care as quickly as possible. Accurate diagnosis can often be delayed – some research suggests an average of 7 years between disease onset and diagnosis of ankylosing spondylitis (AS), for example (Sieper et al., 2002) – as the early symptoms are frequently mistaken for sports injuries.

GPs are in a very good position to act at the first symptoms of a suspected MSD. Where appropriate, GPs should seek to refer patients to specialist teams as early as practicable to enable management of the condition to begin. If GPs do not react adequately at first onset of symptoms, diagnosis and interventions may be delayed and irreversible damage may occur. Moreover, a duplication of diagnosis efforts is likely, which is both costly and lengthy. In the UK it was recently estimated that people with rheumatoid arthritis (RA) visit their GP four times before receiving an adequate diagnosis (National Audit Office, 2009). RA is a good example for a MSD where access to physiotherapy or

Figure 3.1: Development of work disability over 15 years in patients with recent onset of RA



Source: Eberhardt, Larsson, Nived and Lindquist, 2007

to appropriate drug therapies can reduce the severity, impact or progression of the condition and a delay in diagnosis or treatment can make recovery, job retention or rehabilitation much more difficult (Halpern, Cifaldi and Kvien, 2008).

However, if there are no institutions or regulations which foster this early referral, this effort may be undermined by long waiting times at the MSD specialist. There are examples from a number of countries included in our study which have established special clinics for those with early features of MSDs (see Appendix E). The UK NAO report calculates that early clinics decrease annual healthcare costs (via a reduction in GP visits and reductions in diagnostic tests before referral) and increase the number of people diagnosed within 3 months from onset of symptoms.

For some inflammatory MSDs, disease activity is highest in the first years of the disease. Managing and stopping the progression of disease is paramount to avoiding disability. There are also variations in treatment of MSDs between countries, which impacts on the stage at which healthcare professionals are likely to prescribe medications or therapies which may help patients to stay in work. The relationship between disease activity, work ability, costs and a variety of other clinical features underscores the importance of early intervention.

Early action in a multi-disciplinary team approach between GPs, occupational health professionals, the patient and their employer can help those with MSDs to keep their jobs and to achieve a balance between the individual’s need for respite and their need to work. The important connections between the health care system, the employer and the social security system for early intervention were strengthened by recent studies which found that rehabilitation to return to work was effective only within three to six months after commencing sick leave (Marhold, Linton and Melin, 2001; Jensen, Bergström, Bodin, Ljungquist and Nygren, 2006).

The diagnosis of MSDs is often not straightforward and requires specialist knowledge. It is important that there is an exchange of knowledge between the specialist and the GP. The development of such networks is dependent on a sufficient number of specialists. As can be seen from the benchmarking table in Appendix C, the number of rheumatologists and GPs vary widely in the countries under review.

Gaps in access to specialist clinical expertise – particularly in rural areas – were reported in several countries. This had an impact on the ease and speed with which both diagnosis and treatment could be accessed by some workers with MSDs. Moreover, to be prepared for the forecast rise in MSDs, the number and distribution of clinicians and physical therapists should be considered in medical workforce plans.

Traditionally, the focus of the health care professional was on a patient's disability. Policies in many countries change and shift the focus on what a person affected by MSDs can still do. This reflects evidence that suggests that work can help ameliorate the deterioration of many conditions and help recovery from MSDs. In the UK, this change is reflected in the 'Fit Note', which is being trialled and is due to replace the traditional sick note in 2010 (Chang and Irving, 2009).

It is of particular importance that health care professionals are aware of the positive effects of work on their patients' lives. There is abundant evidence that work is beneficial beyond economic aspects (Coats et al., 2005; Waddell and Burton, 2006a). It generates social capital and gives us purpose and meaning. The ability to judge when and to which degree it is beneficial for a patient to return to work is no easy task as the temporal aspects of some MSDs require good management to ensure that individuals can perform their job but do not make work impossible. Assessing work ability requires medical knowledge, but also needs to take into account the biopsychosocial aspects of the patient. The biopsychosocial model of health emphasises the interplay between the biological (eg disease, strain, joint damage), the psychological (eg disposition, anxiety) and the social (eg work demands, family support) aspects. It represents a helpful way of assessing the causes of some MSDs, of planning treatment and management and of approaching rehabilitation into the work place. As Waddell and Burton (2006a) have argued, the goals of the biomedical model are to relieve symptoms, whereas the goals of clinical management informed by the biopsychosocial model – especially in occupational settings – should be to control symptoms and to restore function.

MSD patients generally do not have to be 100 per cent fit for work to be able to return to their workplace. Since the majority of MSDs are not diseases to be cured, and there is limited evidence that prevention is possible, it has been argued that the focus of treatment should be on returning to the highest or desired level of activity and participation, and the prevention of chronic complaints and recurrences (Burton, 2005; Bekkering et al., 2003) rather than eradicating the cause of the problem or returning to normal function.

In terms of cost-effectiveness, a recent prospective study of an early cognitive-behavioural team-based rehabilitation programme for long-term pain related sickness absence found that the costs of the intervention were balanced out in the first year (Ektor-Andersen, Ingvarsson, Kullendorf and Orbaek, 2008). Another example of the use of cognitive-behavoural treatment from Spain is described below in Appendix E. Furthermore, a large potential for further cost reductions was identified for increased implementation of work place-based return to work interventions. This premises systematic criteria to identify the right patients at the right point in time.

While the number of advocates of the biopsychosocial model as it applies to all MSDs is growing, some of those who can have most impact on fulfilling the labour market participation of workers with MSDs have yet to embrace its principles as fully as they might.

Spanish case study: Cognitive behavioural treatment

Introduction: To evaluate whether an early cognitive-behavioural treatment complementary to a rheumatologic care programme, for patients with recent-onset temporary work disability caused by musculoskeletal disorders (MSDs) is effective.

What approach was taken? Patients with an MSD-related temporary work disability episode from 3–8 weeks' duration who were in a rheumatologic care programme were randomised into a control group (rheumatologic care programme) or an intervention group (rheumatologic care programme plus cognitive-behavioural treatment). Enrolment lasted 24 months and follow-up lasted 6–24 months. Efficacy variables included duration of temporary work disability episodes, total number of work days saved, relative efficacy, and relative rate of return to work. An economic evaluation was also performed.

What were the results? One hundred and eighty-one patients were included (66 control and 115 intervention patients), generating 222 episodes of MSD-related temporary work disability. Episodes tended to be shorter in the intervention group than in the control group (mean 98 versus 127 days; $P = 0.053$), with a relative efficacy of 22.9 per cent. There were no differences in duration of the first episode between groups (mean 105 versus 110 days; $P = 0.79$), but relapse episodes were significantly shorter in the intervention group (mean 63 days versus 197 days; $P = 0.0002$). Costs were also lower in the intervention group. To save 1 day of temporary work disability, $13.50 had to be invested in the programme. Each dollar invested generated a benefit of $4.08. The programme had a net benefit of $172,607.

Conclusion: Early cognitive-behavioural treatment complementary to a rheumatologic care programme is cost-effective, adds > 20% efficacy to the rheumatologic care programme and reduces the duration of relapses.

Source: Leon et al., 2009

However, whilst treatment to ease or relieve the symptoms of non-specific MSDs will always be a priority, medical intervention is not necessarily the only, or the best, route to recovery or helping those with non-specific MSDs to manage their condition. In fact, for non-specific conditions, an individual's recovery and chances of returning to work can be adversely affected by over-medicalising their condition. This is why it is very important that there are social and labour policies in place that support people with MSDs in the workplace.

3.6 An integrated approach to labour market and social policy

Policymakers recognise the importance of health and well-being in the workplace and most countries have legislation or programmes in place to prevent accidents at work. However, the issues workers with MSDs are faced with are much wider than occupational health and safety. One of the most important characteristics of functioning labour market policy is the existence of programmes serving as a buffer for vulnerable workers so that they do not become detached from the labour market. Finding ways of improving job retention for these workers is vital because we know that their chances of finding meaningful work again are severely damaged (Bartley, Sacker, Schoon, Kelly and Carmona, 2005).

Instead of models that allow people with partial work capacity to receive either a disability benefit or to pursue gainful employment, new solutions are sought which enable combinations of social security and paid work. This will improve both the welfare of individuals and the working capacity of society at large (Hytti, 2008).

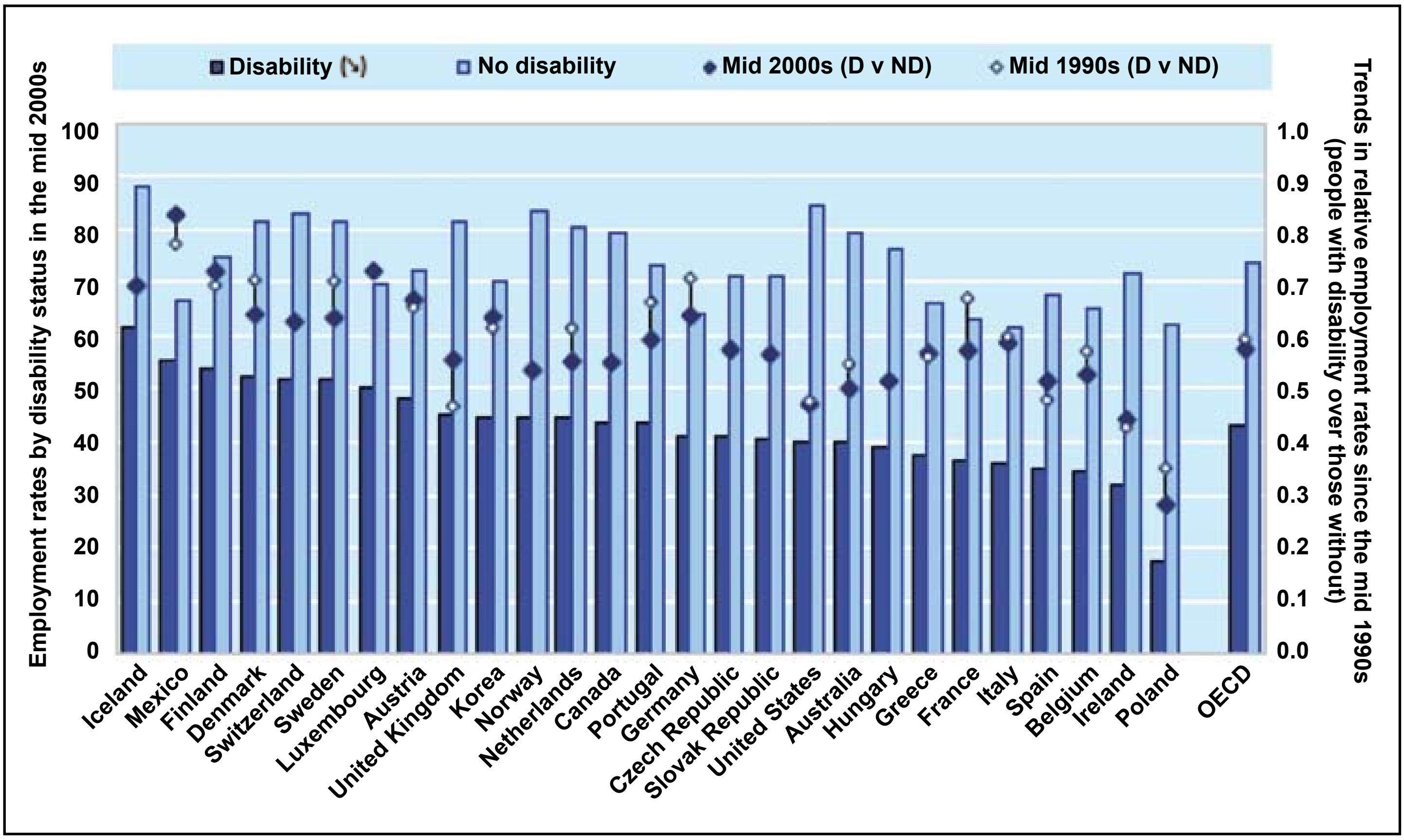
The enormous waste of human capital assets caused by MSDs explains the great potential of programmes and policies aimed at improving the work ability of people with MSDs. Having policies in place to keep people with partial work disability in the workforce ensures their social participation, raises their living standards and maintains effective labour supply in the face of an ageing population. However, labour participation rates of disabled people are low across Europe (see Figure 3.2 on the next page), which could at least partly be explained by inadequate policies to keep them in the workforce.

The OECD reports that several countries have changed their policy stance recently. People with partial work capacity are increasingly treated like the unemployed. This entails a change in medical and vocational assessments towards a work orientation (OECD, 2007). A focus on capacity rather than incapacity is the first important step in this direction as low disability outflow is linked to limited access to vocational rehabilitation and employment integration measures (OECD, 2009a).

Countries should refocus operational policy around what people can still do at work and rehabilitating people back to part- or full-time work rather than keeping them at home infinitely. This is consistent with the notion that the limitations imposed by sick notes, statutory sick leave and formalised return-to-work (RTW) programmes may serve to reinforce the illness of the patient and can tie employers' hands. Coming back to the concept of the Fit Note in the UK, there is sufficient evidence that transitional work arrangements are of value to workers while maintaining productivity.

The OECD found that '*to ensure that people with partial work capacity remain in or enter the labour market, it has proven necessary to reform assessment procedures and to change the benefit structure*.' (OECD, 2007). Some countries are more explicit than others in making work a policy objective. These countries see work as a positive activity and as a source of well-being beyond mere economic prosperity and make early (RTW an active policy objective. In the Netherlands, it is institutionalised that companies should have and pay for a RTW plan for their employees. While this is certainly not exhausting what can be done, it is a statement of the importance of the issue

Figure 3.2: People with disability are far less likely to be employed all over the OECD countries



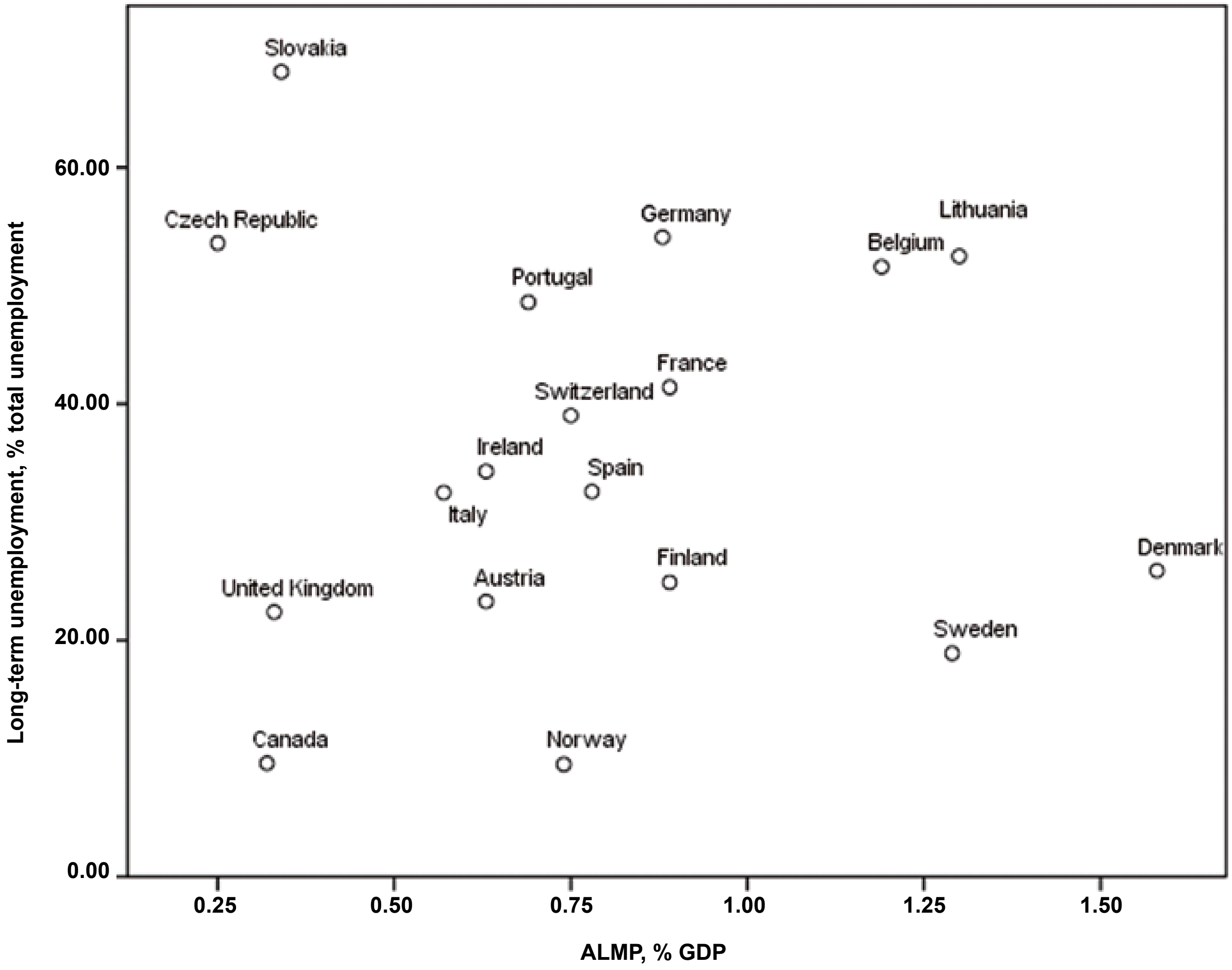
Source: OECD Background Paper: Sickness, Disability and Work - Keeping on Track in the Economic Downturn, High-Level Forum, Stockholm, 14-15 May 2009

Notes: The legend relates to the variable for which countries are ranked in decreasing order from left to right. OECD refers to an unweighted average for 27 countries for employment rates and 19 countries for trend in relative employment rates.
Source: EU-SILC 2005 (wave 2) and ECHP 1995 (wave 2), except: Australia: SDAC (Survey of Disability and Carers) 2003 and 1998; Canada: PALS (Participation and Activity Limitation Survey 2006; Denmark: LFS 2005 and 1995; Finland: ECHP 1996; Korea: National Survey on Persons and Disabilities, 2005 and 1995; Luxembourg: EU-SILC 2004; Mexico: ENESS (National Survey of Employment), 2004 and 1996; Netherlands: LFS 2006 and 1995; Norway: LFS 2005; Poland: LFS 2004 and 1996; Spain: EU-SILC 2004; Sweden: ECHP 1997; Switzerland: LFS 2005; United Kingdom: LFS 2006 and 1998; United States: SIPP (Survey of Income and Program Participation) 2004 and 1996 (wave 4 data)

and intent in this country. In Norway the state plays a more active role in paying for such interventions while in Denmark a tripartite agreement has explicitly involved all social partners in setting a framework for intervention.

The OECD reflects the different approaches to labour market programmes in their definitions of active labour market programmes (ALMPs) and passive labour market programmes (PLMPs). ALMPs include all social expenditure (other than education) that is aimed at the improvement of the beneficiaries' prospect of finding gainful employment or to otherwise increase their earnings capacity. Although not statistically significant, Figure 3.3 on the next page provides data for long-term unemployment rates and active labour market expenditure as a per cent of GDP by country. PLMPs or income maintenance programmes consist of unemployment compensation programmes and programmes for early retirement for labour market reasons.

Figure 3.3: Long-term unemployment and active labour market programmes by country, 2005



Source: OECD, 2009b, 2009c

The benefit culture has an important influence on how work is perceived in different countries. Disability benefit cultures undermine efforts to reintegrate people with partial work capacity into the workforce and the same measures that are supposed to protect them keep them close to or in poverty. Benefit systems and assessment procedures often push disabled people with significant work capacity into long-term benefit dependency (OECD, 2007). The 2003 OECD report identified benefit generosity as the single most important factor for a country's disability benefit recipient rate.

Some regulations from social systems focusing on PLMPs can lead to unforeseen disincentives that encourage early retirement, aptly referred to as the benefit trap. Tax benefits and high disability benefits compared with unemployment benefits may be unhelpful when attempting to create a policy aimed at reintegration of people with MSDs into the workforce. A recent paper comparing the disability policies and employment in Finland with other Nordic countries finds that the absence of social and labour market policies in Finland has served to channel people with partial work capacity into long-term unemployment and social exclusion (Hytti, 2008). More recently Finland has joined several other countries in introducing work disability benefits that allow workers to increase gradually their hours of work and to reintegrate into the workplace without financial penalty. Countries where the benefits systems allow such flexibility – and which tacitly recognise the positive effects of transitional work arrangements to rehabilitation – remain exceptional, however.

Concomitantly with reforms, it is also within the responsibility of governments to devise information campaigns designed to eliminate the prejudice that sickness absence is always the best solution. Health promotion campaigns in back pain have shown to be effective at getting the message across that experiencing pain does not necessarily mean that the condition has worsened or that being active is bad for you (Buchbinder, Jolley and Wyatt, 2001). This demonstrates that with sufficient commitment and investment from central government, campaigns of this scale can have an impact on public perceptions of common MSDs. Moreover, different layers of government need to work together to improve information on the availability of programmes and to avoid shifting people between benefits. One example of the welfare system and health care system working together is described below.

Country case study – The Renaissance Project – Republic of Ireland

This DSFA-supported project aimed to target early interventions to prevent chronic disability from low back pain.

What approach was taken?
Between January and June 2003, 3,300 new claimants for Disability Benefit and Injury Benefit with GP-certified low back pain (LBP) were selected for participation in the project. All subjects were aged between 20 and 50 years old. A matched control group of claimants was also selected as a comparator. Of the initial 3,300 claimants, the following outcomes were reported:

- 1,700 (51 per cent) returned to work within 4 weeks.
- 1,600 were selected for early referral and asked to attend a medical assessment at a point 4–6 weeks after claiming (much earlier than normal).
- Of these 1,600, a total of 1,000 decided to return to work and were not medically assessed.
- The remaining 600 were assessed using a diagnostic triage approach.

The medical assessments placed claimants into one of three categories. Those with simple back pain (95 per cent), those with nerve root pain (3–5 per cent) and those with a potentially serious spinal pathology (1–2 per cent of cases). Claimants in the simple back pain category were assessed for their work capability, taking into account symptom severity, occupation, potential for work restriction and potential to change the demands of the job.

Cont.

Cont.

What were the results?

The proportion of claimants progressing from simple back pain to chronic disability fell, with 64 per cent assessed to be capable of work, compared with 20 per cent of claimants assessed during the previous year. There was also a reduction in the number of claimants appealing against their assessment (44 per cent versus 61 per cent). Compared with the control group there was a 40 per cent reduction in claims, which progressed to a long duration and a saving of over €560,000 compared with the previous year.

What happened next?

The study was regarded as a success, especially as it demonstrated that targeted early intervention with low back pain could reduce progression to chronic disability, improve the health of claimants and reduce health care costs, reduce absence from work, improve productivity and yield savings for long-term benefits schemes. The project was extended beyond its original scope and has produced further positive results.

Further details of the project can be downloaded from:
www.welfare.ie/EN/Policy/ResearchSurveysAndStatistics/Pages/renaissance.aspx

3.7 Is there a role for employers?

In addition, many countries are reconsidering the role of employers by strengthening their responsibilities. This includes prolonging the period during which employers are responsible for sickness benefits. Some examples are discussed below.

Since 2006, workers in the Netherlands with an earnings capacity reduction of 15–34 per cent are no longer eligible for a disability benefit. Instead, the employer has to adapt the workplace and the employment relationship is maintained. For workers with a level of incapacity between 35–79 per cent the disability benefit is higher if they are working. Moreover, the employer is now responsible for sickness benefits for as long as 2 years, during which time the employee cannot be dismissed. Case managers and dedicated reintegration companies help to make sure employees are still able to contribute.

Large companies in Finland are obliged to pay up to 80 per cent of the disability benefit of a worker who lost his/her job because of disability. In Denmark, employers who provide sheltered subsidised workplaces are exempt from the employer sick pay period (Hytti, 2008).

The involvement of employers is vital as RTW programmes will only work in countries with substantial opportunities for part-time employment and good employment support systems. Otherwise, reforms will translate into higher inflows into unemployment and social assistance (OECD, 2007).

The changes in policies need to be carefully designed to avoid negative effects on the employability of people with partial work capacity. In this context, it is important to remember that as of 2006, EU member states should have enacted an EU directive on anti-discrimination legislation. However, in some countries there is no legal framework covering those with recognised clinical conditions at the workplace. In this case there is not even a baseline of regulation or minimum standards. We therefore advocate strongly that compliance regimes for employers, called Disability Discrimination Acts in many of the countries under review, need to become part of public policy.

Employers in many countries are concerned about recruiting skilled workers (Huster and Bourcade, 2008). Keeping older workers in the workforce, as well as making workplace adjustments for individuals with health problems, could help address the need for skilled labour.

Many jobs involve activities that can constitute a risk factor for MSDs. It is important to point out that much can be done to prevent work-related MSDs and minimise risk factors, all of which can be promoted by employers:

- healthier lifestyles
- more physical fitness
- ergonomics
- occupational health and safety (protective gear etc)
- psychologically healthy work places.

Much of the attention that employers pay to the issue of MSDs and the impact of the workplace on their onset or deterioration is driven by a concern to avoid or limit litigation and ensure that they are fulfilling their duty of care. However, this neglects a wider issue that other work-associated factors can also contribute to MSDs, as we pointed out above when remarking on the biopsychosocial framework and the connection between psychosocial factors and physical conditions.

Whilst the message about manual handling and work design may have been accepted by some employers, the fact that making adjustments to the physical working environment and to working time can help keep an employee at work or help others with chronic conditions to return successfully to work has yet to become common currency. Changing attitudes and raising awareness about the management of MSDs is an important part of reducing their burden to individuals, employers and society. Not only has evidence shown that work is good for you, but also returning to modified work can help recovery (Feuerstein et al., 2003; van Duijn and Burdorf, 2008).

It is in an employer’s best interests to act early if they are to minimise the costs to the health of employees and to their business of absence. Employers are in a good place to detect frequent sickness absence spells and patterns in work disability, and have their role to play in addressing job rehabilitation and retention. As the monitoring of sickness absence is so important for early action, in Norway employers cooperate with the local social security office. In exchange, support is offered to employers so that employees identified to have problems at the workplace can continue to contribute. This initiative is part of a tripartite agreement that extends to local workplaces.

Based on a review of the available evidence Breen, Langworthy and Bagust (2005) recommend that employees and employers should discuss and adjust work within the first week. If employees have concerns about their condition they should consult a health care professional and, following referral or diagnosis, advice and planned action, a review should be conducted within 4 weeks. Employers should follow a structured process by which they identify employees at risk and offer the help of an occupational health professional.

The important role of employers was recognised by the OECD in its recommendation to offer incentives for employers to reward action at the first sign of repeated or prolonged absence through occupational health advice, rehabilitation and work retention (OECD, 2009a).

Apart from costs that are directly attributable to MSDs (such as continued remuneration and costs of workplace adaptations) there are significant costs involved in losing human capital that employers may not be aware of and that could be avoided by creating an inclusive and flexible work environment (as demanded by the EULAR (2009) Charter For Work). These costs include, but are not limited to:

- retraining costs
- lost manpower
- costs of recruitment
- reduced potential for increases in productivity.

Waddell and Burton (2006b) showed that sickness absence management, effective return to work programmes and rehabilitation are the principles for effective management.

Transitional work arrangements work to the mutual benefit of employers and employees, taking account of the fact that there is not just a physical work environment, but also biopsychosocial factors that are of tremendous importance to workers with MSDs. One of the cardinal symptoms of RA is morning stiffness – and an adjustment of working time to make time for getting ready in the morning makes a big difference to the psychological well-being of the employee and little difference to many employers, especially if they are helped to make reasonable adjustments to working time arrangements.

A growing body of work shows that adjusting a variety of work demands can support successful return to work among those with a range of MSDs (Schultz, Stowell, Feuerstein and Gatchel, 2007; de Croon et al., 2004; Feuerstein et al., 2004; Chorus, Miedema, Boone and van der Linden, 2001). Often, interventions at the workplace are not expensive or complex, but help employees to contribute continuously. In some circumstances the costs of these interventions can decrease over time as the employee exercises more control and discretion in their job. There are numerous types of work-based interventions for assisting those with MSDs, ranging from ergonomic adjustments to providing access to physiotherapy, modifying work programmes to cognitive behavioural therapy or a combination of various strategies. However, evidence on the success of these interventions at tackling non-specific MSDs is mixed (Meijer et al., 2005). Even for specific conditions such as RA, the evidence for the effectiveness of vocational rehabilitation is slim (Backman, 2004; de Buck et al., 2002).

When assessing interventions at the workplace, a distinction needs to be made between work-related disorders and occupational disorders (Punnett and Wegman, 2004). For occupational disorders, the fact that work can cause and contribute to these conditions is widely recognised and the use of assessments of workplace risk to reduce the incidence of these conditions is well established. For inflammatory rheumatic diseases such as RA and spondyloarthropathies (SpAs), there is evidence that physical work demands, lack of support, self-stigma and lack of flexibility over working time can each make job retention or return to work more difficult (der Temple and van der Linden, 2001; Gignac et al., 2004).

However, there is evidence that the following factors make a workplace-based approach to return to work cost-effective (Franche et al., 2005):

- early workplace contact with employees on sick leave
- an offer to accommodate work
- contact between healthcare provider and the work place
- ergonomic work-site visits
- the possibility of super-numerary replacements
- the presence of a return-to-work coordinator.

3.8 The role of employees

As governments invest more in activation measures to support return to work, the role of people with disabilities has changed. They are no longer seen as passive benefit recipients and expected to take a more proactive role in their integration in the workforce. Therefore they are increasingly treated as jobseekers, which implies that they have to participate in courses or programmes in order to improve their chances of finding employment.

To emphasise this, some countries have introduced an element of benefit conditionality. After a change in the benefit system in the Netherlands in 2004, employees now might lose employment protection if they put too little effort into vocational rehabilitation (Steenstra et al., 2003).

Finland, for example, has just adopted a new sliding scale of benefits, which are calculated according to the degree of work disability. This serves to abandon the dichotomy of living on either an income from work or a disability benefit. The aim of these reforms is to help workers stay connected to the labour market. Table 3.3 shows a number of benefits and labour policy measures designed for partly incapacitated workers in the Nordic countries (OECD, 2007).

Table 3.3: Benefits and labour policy measures for partly incapacitated workers in the Nordic countries

<table>
<tr><th colspan="4">Income security benefits offered through social security</th></tr>
<tr><td>Partial sickness allowance</td><td>Partial disability pension</td><td>Possibility to earn income while on pension</td><td>Possibility to suspend pension</td></tr>
<tr><th colspan="4">Labour market policy measures</th></tr>
<tr><td>Indefinite sheltered work etc</td><td colspan="2">Fixed-term pay subsidy on the open labour market (employment subsidies)</td><td>Direct job creation on public funds</td></tr>
</table>

Source: OECD, 2007

In Denmark the disability scheme was changed in 2003 to focus on what the person can still do rather than on their incapacity. Subsidised ‘flex-jobs’ were created and only those whose capacity is too low to carry out a flex-job, even after an activation or rehabilitation programme, are granted a disability benefit.

As mentioned previously, disability assessors have a crucial role: they need to be aware of the clinical limitations of the worker and also have experience in vocational rehabilitation. Furthermore, the OECD recommends governments to have programmes in place to allow periodic re-assessment of disability benefit – otherwise workers are indirectly compelled to remain inactive (OECD, 2009a). The UK has recognised the importance of these periodic re-assessments of benefit claimants to adjust job demands and actions as the condition changes. The process is called Pathways to Work and consists of mandatory work-focused interviews every 6 months, which should lead to a personal action plan.

Country case study – Sweden

Background

An initiative in south-western Sweden to prevent, through early intervention, long-term absence from work among people with musculoskeletal pain was evaluated by researchers from the Multidisciplinary Pain Clinic at the Primary Care Region, Skane, Malmo and the National Research Centre for the Working Environment in Denmark.

Design

The south-western healthcare region of Sweden – centred on Malmo – has a population of approximately 350,000 people. From November 2000, for a period of 16 months, the project was based at one of the 54 primary healthcare physiotherapy clinics in the region. People of working age (18–65 years) who were on sick leave and who had no more than 3 months of pain-related sick leave during the previous year were eligible for inclusion. These data were based on both self-reports and verified through the database of the National Social Insurance Board.

During the first visit participants were asked to complete a self-completion questionnaire (the Orebro Musculoskeletal Pain Questionnaire, OMPQ-r). The 575 participants who reached this stage of the project (from an original group of 2,550) were then randomly assigned to an intervention group (194) and a control group (381). The groups were similar on a number of socioeconomic indicators.

Cont.

Cont.

Intervention

There were several stages to the intervention:

1. **Work disability assessment**. Each participant was rated by a physiotherapist on a 1–11 scale, which indicated the probability of a return to workability by receiving a specific treatment.
2. **Development of a team-based functional behaviour analysis tool**. This method, a form of cognitive behavioural therapy (CBT), involved the development of a four-factor model focusing on four external sources of risk: community, workplace, family and health care. Here, clinicians would be able to identify whether these aspects of lifestyle were likely to affect MSD severity or the chances of recovery. A further three-factor tool was developed to assess the participant's scores on cognition, behavioural and physio-psychological scales.
3. **Clinical application of tools**. Through the use of interviews and physical examinations, the primary care teams were able to assess which form of team-based rehabilitation would be most beneficial to up to nine groups of participants, depending on the nature of their conditions. Some of these interventions involved CBT sessions and others focused more on physiotherapy, which were then administered for a year.

Results

Compared with those in the control group, those participants in the intervention group had 5 per cent less sickness absence over the year of the study. In the control group, a total of 91.7 days of compensated absence were taken per person, compared with 76.9 per person in the intervention group – a reduction of 14.8 days per person per year. This reduction has been calculated as representing a reduction in social security expenditure of €236,357 during the year of the study. The cost of the intervention (staff salaries, premises and materials) was calculated as €235,681 over the same period. Thus, the intervention appeared to cover its costs in the first year, even though social security payments were the only measure used. By including other benefits (productivity, other social benefits etc) the intervention was likely to make a significant economic and social impact net of the costs of the intervention itself

Source: Ektor-Anderson et al, 2008

Patient groups play an important role as they can encourage workers to change behaviour and beliefs about MSDs and on the importance of maintaining physical activity and employment. They can serve as a source of information for their members on all issues surrounding the workplace, from guidance on discussing the topic with the employer to writing a convincing curriculum vitae (CV) when trying for reintegration into the workforce. Moreover, they provide counsel on patient rights and access to education, training and employment. Arthritis Ireland, for example, is running a successful series of programmes for workers with RA who have been out of work for more than 5 years.

3.9 Priorities and the funding of interventions

Governments have to make choices about where to focus their activities given limited resources. Identifying the approach to setting priorities has not been a core focus of this research. Nevertheless the implementation of early interventions for MSDs is likely to be significantly influenced by the ways that governments (and within them individual departments with their respective remits for prevention, health care and welfare) reach decisions on funding priorities.

The approach to priority-setting seems to be relatively unclear in many of the countries that this project has reviewed. It is likely that most governments will draw on a variety of approaches and information to inform their decision making. The lack of data and information on the scale (prevalence and incidence) and the impact (upon all stakeholders) is likely to disadvantage those suffering from MSDs. It is also likely to miss the opportunity that averting these costs represents for all stakeholders; from the health care system through to the competitiveness of the economy more generally.

In the health care sector, there is increasing focus on the use of Health Technology Assessments (HTAs) to inform decisions on funding interventions, and there is increasing interest in collaboration in HTAs at the European level (de Pouvourville, Ulmann, Nixon, Boulenger and Drummond, 2005; Drummond 2008, EUnetHTA, 2008). In addition, in those countries where funding decisions are influenced by HTA there can be a relatively narrow view on the scope of economic benefits that can be considered to inform their decisions (and this is discussed in more detail later in this section). This could further hinder early intervention, making it more difficult to make the case for early intervention.

Timely access is at the heart of early intervention. There are a number of approaches that could be used to encourage timely access. Just one example is to consider setting a target for access and benchmarking performance. Such an approach is used in the UK in its National Service Framework, with a maximum 18-week target between diagnosis and treatment (a target applicable across the whole of the NHS in England and all health conditions).

Care plans may also link to the use of HTA. In some countries HTA agencies produce recommendations for the use of selected interventions and/or guidelines. The more formal HTA approach (perhaps the best known is the English National Institute for Health and Clinical Excellence, or NICE) can significantly influence the availability of interventions in the health care system. Plans can either be an output of HTA and/or link to HTA recommendations and/or guidelines.

The approach taken to HTA can therefore play an important role as either an enabler (by recommending use) or barrier (by not recommending use) of an intervention. The decision that is reached by the HTA agency is linked to the scope of benefits it can (since it may be limited by legislation) or will (since it may choose to set out the scope itself) consider. There is considerable merit in considering consensus across guidelines for treatment (where separate to HTA) and HTA approaches to decision making. For example, in line with the recommendation in the Bone and Joint Decade report, Woolf (2000) advocates that treatment should consider all aspects of the condition on the person (including work). HTA guidelines could also take labour market effects into account when evaluating interventions. However, this is likely to require revisions to current guidelines for economic evaluation (as part of HTA) as guidelines appear patchy at best on issues of indirect costing (Jacobs, 2005).

Significant debate remains about the inclusion or exclusion of such wider impacts. Current principles for HTA suggest that the wider societal perspective should be adopted (The International Group for HTA Advancement, 2008), but there are concerns that this could not only be methodologically challenging (since there is debate over the appropriate method) and may disadvantage particular groups in society (such as the elderly, young or those who are unlikely ever to work due to their illness/disability) (Kennedy, 2009). One pragmatic approach would be to allow analysis to include all methodologies and findings and then allow the decision makers (who may be separate to those who conduct the HTA) to consider whether they wish to make use of this information in reaching a decision.

The majority of studies included in our rapid review of the evidence on the economic benefits of early intervention described above in Section 3.9 take a relatively narrow viewpoint when considering cost-effectiveness. They tend to focus on the health care payer perspective and do not allow for the potential for wider costs and benefits to be affected by the intervention (such as the impact upon the ability to work, sickness absence or the impact upon carers). To a large degree this is likely to reflect the perspective required by the decision-maker. In England, NICE is limited to taking the health and personal social services perspective in their technology appraisals (NICE, 2009).

However, when a wider perspective is taken, the impact on cost-effectiveness can be significant. For example, the UK National Audit Office has estimated that increasing the proportion of patients who access DMARDs by 10 per cent within 3 months of diagnosis could lead to an initial increase of costs by GBP£11million over 5 years in the National Health System (NHS). However, productivity gains of GBP£31million could accrue over the same period. Moreover, there is a 4 per cent gain in quality of life over 5 years (NAO, 2009).

This wider approach of looking at all relevant benefits is desirable. In some countries we detected a degree of silo mentality between the different sectors of the health and social system. This makes it difficult to argue for investments in one sector (the health care system) that lead to savings in another sector (the welfare system and the economy more generally). To avoid this, governments must ensure that the government department responsible for public finance is involved. This will help to avoid the silo mentality because this approach is able to look across all government departments and can aid joined-up thinking. It can also aid in managing the benefits of upstream investments to prevent downstream costs.

3.10 The economic costs and benefits of interventions

There is an increasing evidence base to support the logic that the longer the sick leave, the more difficult it is for the employee to return to work and the higher the economic cost (Frank et al., 1998; Meijer et al., 2006). Interventions that can reduce the period of sick leave are therefore important not only for the individual's recovery, but also for the avoidance of the consequences for employers, the health care system and competitiveness in the economy more generally.

Calculations of the costs of treatment tend to evaluate the clinical costs and benefits of treatments. The wider impact on people with MSDs remaining in work or returning to work early extends to the biopsychosocial and economic effects to the individual of being in work and to the reduced costs to the social security system. Considering the wider economic costs MSDs have to society, such as their impact on incapacity benefits or early retirement rates due to ill health, could ensure that decisions reflect the productivity losses that may be caused by MSDs if early intervention is delayed. A core hypothesis of this project is that there is an early intervention premium (a benefit over and above late intervention, and that this outweighs the incremental costs of early intervention). This premium is likely to be made up of a variety of benefits that accrue to different stakeholders, which are summarised in Table 3.4 below.

Table 3.4: Potential benefits of early intervention

Nature of benefits	Description
Patient	
(1) 'Wellness' made up from:	
(a) Morbidity reduction avoided	Potentially avoid a greater reduction in health-related quality of life than would be the case with late intervention
(b) Anxiousness avoided	Worry during wait for treatment reduced
(c) Aids/adaptations/equipment avoided (eg grab handles, wheelchair etc)	Potentially avoid need for certain equipment and/or home adaptations that may have been required in the case of late intervention
(d) Personal care avoided (eg household, personal, child care, transport, other)	Potentially avoid need for personal care that may have been required in the case of late intervention
(2) 'Workability' made up from:	
(a) Sickness absence avoided	Potentially avoid days absent from work and given the link between work and health, potentially contributes towards overall 'wellness'
(b) Presenteeism avoided	Potentially avoid days when not fully productive, but at work
(c) Early retirement avoided	As above
Carer	
(3) 'Wellness' from anxiousness avoided	Worry about individual with MSD during wait for treatment reduced
(4) 'Workability' made up from:	
(a) Work absence avoided	Potentially avoid days absent from work to look after individual with MSD and given link between work and health, potentially contributes towards overall 'wellness'
(b) Early retirement avoided	As above
Employer	
(5) 'Workability' made up from:	
(a) Presenteeism avoided	Potentially avoid lower productivity whilst individual is at work but not at full capacity
(b) Sickness absence avoided	Potentially avoid days absent from work, scale dependent upon the potential for substitution with another employee/temp etc
(c) Early retirement avoided	Potentially avoid the costs of recruitment and training to replace individual who leaves the employer
Healthcare system	
(6) 'Wellness' from avoiding more intensive use of health care system	Potentially avoid more costly interventions (eg joint replacement in RA), ER visits etc
Welfare system	
(7) 'Workability' from avoiding transfer payments	Potentially avoid paying transfer payments to those who are sick and/or no longer working

Early intervention could also bring additional costs (for example, increasing the number of consultations, diagnostic tests etc). A rapid review of the evidence was undertaken to explore the available evidence for a potential economic premium. Details of our rapid review and the articles included can be found in the Appendix. Hereafter, we present broad observations and a discussion.

Relatively few studies are available on the economic benefits of early intervention

In the studies included in the rapid review, only two explicitly considered early intervention (NAO, 2009; Bültmann, Sherson, Olsen, Lysbeck Hansen, Lund and Kilsgaard, 2009). The vast majority of studies do not discuss the timing of the intervention. Rather, they may refer to the time since diagnosis [and this can be a significant length of time, > 8 years in Bansback, Brennan and Ghatnekar (2005) and > 12 years in Mittendorf (2008)]. It appears that there is currently a gap in our understanding of the cost-effectiveness of early intervention across Europe (Mittendorf, 2002).

This lack of published economic evidence may be due to clinical evidence becoming available only relatively recently on the additional benefits of early intervention. There is likely to be a lag between this clinical evidence becoming available and these findings being incorporated into economic modelling. The two studies that do look at early intervention were both published in 2009 (NAO 2009; Bültmann et al 2009). It may also reflect the degree to which decision makers have already made decisions regarding access to some of these interventions (Mittendorf et al., 2003).

Studies tend to focus on RA vs other MSDs

The studies included in the review focused on RA (26 of the 36 studies). It is not clear based on this rapid review why this is. However, perhaps it reflects the priorities of decision makers or those funding research to focus on RA versus other MSDs, or it may be that treatments have tended to be shown to be effective first in RA versus other MSDs. It seems that there may be a gap in our understanding of the cost-effectiveness of interventions to treat other MSDs.

Studies tend to focus on medicines vs other interventions for MSDs

The majority of studies included in the rapid review are focused on medicines and not on other interventions, some of which may be provided in the workplace. It seems likely that many of the published cost-effectiveness analyses are used to inform the decisions of agencies that have an explicit interest in using cost-effectiveness to recommend or not interventions in state health care systems. Agencies such as NICE in the UK, and TLV (the Dental and Pharmaceutical Benefits Agency, formally LFN) in Sweden, for example will either commission independent academic economic modelling or draw on pharmaceutical company submissions to inform decisions on the use or otherwise of medicines in the health care system. This may skew the evidence base towards medicines versus other interventions where there are less likely to be interested sponsors of the intervention and where there may be fewer formal barriers such as HTAs to implementation. However, perhaps a lack of economic evidence on other interventions acts as a barrier to convincing decision makers to adopt workplace-based interventions. This could be further explored.

Although there are some examples of agencies that will also consider other interventions (and NICE does consider diagnostics and broader public health interventions), others will focus just on medicines [as does the SMC (Scottish Medicines Consortium) in Scotland]. However, even those agencies whose remit covers more than medicines may not have a balance across different types of interventions. For example, 75 per cent of published NICE appraisals between March 2000 and June 2006 were for pharmaceuticals (Linden, Vondeling, Packer and Cook, 2007). This means that there is likely to be a bias in the availability of economic analysis towards medicines and away from other interventions. That could skew the focus of decision makers, and it could mean that other potentially more cost effective interventions are not adopted as often as they might be if such analysis were available.

There is evidence that other interventions are cost-effective. For example, Pilgrim et al. (2008) in their secondary modelling for NICE to assess the cost-effectiveness of generic interventions to reduce the number of employees on sick leave found that:

- usual care had an incremental cost per QALY gained of £2,697
- workplace intervention had an incremental cost per QALY gained of £2,333
- physical activity and education (with no workplace intervention) had an incremental cost per QALY gained of £2,515
- physical activity and education with workplace visit had an incremental cost per QALY gained of £1,393.

This suggests that perhaps an integrated approach offers the most cost-effective intervention. This is a comparatively low cost per QALY in the UK where a threshold of between £20,000 to £30,000 is often cited (The Stockholm Network, 2008). It also reinforces the potential benefit from joined-up work across the health and welfare systems and with workplaces.

Medicines are likely to be cost-effective for treating MSDs

There is a range of cost-effectiveness estimates available for medicines to treat MSDs. Important assumptions are made in various models to explore medicines to treat MSDs, including length of time treated and how far results from RCTs can be applied into the future. However there appears to be an increasing evidence base that suggests that many medicines are cost-effective. The most recent review by Gladman and Brown (2008) highlights that recent modelling in the UK using naturalistic data suggests that anti-TNFs versus traditional treatments can result in an incremental cost per QALY of £24,000.

It is also relevant to note that many of these cost-effectiveness analyses do not take into account wider socioeconomic factors, such as the impact upon carers and the impact upon an individual’s ability to work. Those studies that include these impacts demonstrate even greater cost-effectiveness (discussed in more detail below).

Workplace interventions are likely to be cost-effective for treating MSDs

Interventions including a work place component are likely to be cost-effective for treating MSDs. There is one study that suggests that early non-medicine interventions can also be cost-effective. Bültmann et al. (2009) consider the impact of work disability screening by an interdisciplinary team followed by the collaborative development of a RTW plan. Workers were approached after 4–12 weeks sickness absence. The total costs saved using this approach were estimated at US$10,666 per person at 12 months follow-up. This was an intervention delivered in Denmark and it is unclear how far this can be generalised to other countries.

Cost-effectiveness analyses of medicines for MSDs use a narrow viewpoint

As discussed before, the majority of studies take a relatively narrow viewpoint when considering cost-effectiveness and tend to focus on the health care payer perspective. They do not allow for the potential for wider costs and benefits to be affected by the intervention (such as the impact upon the ability to work, sickness absence or the impact upon carers).

However, when a wider perspective is taken, the impact on cost-effectiveness can be significant. For example, the NAO acknowledges in its analysis that adopting early intervention (DMARDs provided within 3 months), is cost increasing if you take the NHS perspective. It estimates that on average a patient treated in 3 months would increase the cost to the NHS by £900 over a 5-year period; if the patient were treated with the step-down regime, the cost could rise by up to £1,600 for the NHS. The NAO analysis also includes wider benefits including productivity. It estimated that early treatment would bring about a reduction in lost employment of 30 days over the 5 years for a person of working age. For a patient treated with the step-down strategy, there could be a reduction of 42 days over 5 years. The NAO estimates that the costs of treating an additional 10 per cent of new patients a year (2,600) within 3 months would be around £11million. For those of working age, this earlier treatment could deliver productivity gains for the economy of around £31million due to reduced lost employment and reduced sick leave. That suggests a ratio of close to £3 return to the UK economy for every £1 spent in the NHS. However, the challenge is for decision makers to be willing to invest in one separate sector when benefits will accrue disproportionately outside of that sector.

An increase in cost-effectiveness when including indirect costs does not just apply to early intervention, but also to late intervention. For example, Botterman et al. (2007) in their analysis of adalimumad for treating AS in the UK found a 30-year ICER of £23,097/QALY. This changed to £5,093/QALY when indirect costs were included. Similarly, Wong, Signh and Kavanaugh (2002) in their analysis of infliximab plus methotrexate in the US found an ICER of US$30,500 per QALY considering only direct medical costs. Including indirect and productivity costs resulted in an US$9,100 per QALY gained estimate.

There remains significant debate about the inclusion or exclusion of such wider impacts. There is scope however for Europe to consider the wider perspective, methodologies and the degree to which it may alter decisions through the planned network on HTA being progressed under Article 17 on cross-border health care.[2] This network could include a work programme on the wider societal perspective.

Limitations of the evidence base and the need for further research

Although we performed a rapid review and further searches could have revealed further relevant studies, there does appear to be some limitations to the current evidence base. The papers reviewed all have a number of common features. They draw on the evidence available at a point in time and must make a number of assumptions in order to

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[2] http://ec.europa.eu/health/ph_overview/co_operation/healthcare/docs/COM_en.pdf

estimate cost effectiveness. The degree to which these assumptions (for example, clinical adherence to guidelines for treatment, behaviour outside of trial settings etc) are borne out in reality could therefore affect the resulting cost-effectiveness. For example, there is some evidence that the outcomes of patients treated by generalists versus specialists are different.

Many of the authors recognise these challenges. Many highlight the need for further research to improve the evidence base and to refine the available cost-effectiveness models. This includes observational studies to understand the impact of interventions on long-term disease progression (and to assess how accurate modelling assumptions have been) and on clinician adherence to guidelines for treatment.

3.11 Summary

In this section we have looked at the extent to which there is a case for early intervention in our attempt to improve both clinical and labour market outcomes for workers with MSDs.

In general we have found a theoretical case, a practical case and a prima facie economic case for targeted and coordinated early intervention supported by our qualitative research findings, our review of the small but growing academic and clinical literature, and by our attempts and country and individual-level multivariate analysis (discussed in the next Section of this report).

However, we have also found that – in many of the countries we have studied – awareness, resources and political will are not yet at a stage where coordinated and effective early intervention is currently deliverable. The consequences of this lack of readiness may be far-reaching for workers with MSDs who want or need to retain contact with the labour market. The consequences for national economies in terms of lost productivity are still hard to quantify with any precision. In the next section we examine if there is an economic premium to be gained from many early interventions aimed at workers with MSDs.

4. An early intervention premium?

This section presents the findings of a cross-country, econometric analysis into the impact of early intervention on sickness absence[3]. This analysis tested the hypothesis that there is a relationship between provision of early interventions (as proxied by several variables discussed below) and absenteeism, as well other labour market outcomes such as early retirement. The two main hypotheses investigated were:

1. To what extent do early interventions provide a premium (ie a marginal effect) on sickness absence?
2. What are some additional benefits when health, welfare and work are aligned to support early intervention?

In other words, our analysis tested the degree to which absenteeism was accounted for by early interventions and the degree to which early interventions accounted for other labour market outcomes. In addition to examining the strength of the relationships between our variables, we also explored the direction of the relationship, whether positive or negative. For example a negative statistical relationship between the early interventions and absenteeism would mean that where early intervention provision was in place absenteeism tended to be less compared to the cases where such provision was not in place.

In this section we first outline the data we compiled in order to examine our hypotheses, then we present our analyses and findings.

4.1 Populations, measures of variables and data sets involved in the analysis

In this analysis we were interested in two different populations: the general population and the population aged over 50 years. Examining the older population of workers separately is important because when people in this group experience ill-health they may decide to retire rather than simply taking sickness absence. Thus, in relation to the older population we are interested in a slightly different range of labour market outcomes, even though the general scope of the analysis is the same for both the general population and older people. As such, the measure of absence from the labour market differs between the two groups.

In relation to the general population the outcome of interest is simply:

- absence as measured by days absent from work due to health reason (in blocks of days).

The outcomes of interest for the aged 50+ population were:

- retiring early
- having a labour market status of sick or disabled (as opposed to employed, unemployed, caring, or other)
- reporting that they are afraid they will retire early due to health limitations.

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[3] The analysis was conducted by RAND Europe using data and variables specified by The Work Foundation. We are grateful to Priscilla Hunt and colleagues at RAND Europe for their contribution to this section of the report and to the Technical Report which contains their full analysis.

Measures (proxies) of early intervention:

Early intervention is not captured by a single and direct measure. Therefore, a number of proxies for early interventions were employed for the analysis (such as seeing a specialist earlier, taking drugs for pain, ALMPs, PLMPs, health expenditure and physician density). These are discussed in detail below. The data were gleaned from three sources: (a) the variables provided by the literature (b) the interviews reviewed as part of the Fit for Work research across Europe and (c) the individual-level variables identified from various datasets (see Table 4.1). These variables are considered to be economically sensible in that they are consistent with labour absence theory and with empirical findings on absence, health and labour institutions. We caveat this by stating that it is frequently difficult to disentangle early interventions from interventions, thus we made a theoretical argument for the variables we chose.

Table 4.1: Summary of data sources and variables incorporated in analysis

Data source	Sample	Years	Absence variables	Early intervention variables
EWCS	General population	2005	Days absent	
SHARE	Aged 50+	2004–2007	Early retirement; afraid must retire early due to health limitations; sick/disabled;	Seen a specialist earlier; taking joint pain/ inflammation drugs for pain
OECD	General population	2004–2006		Expenditure on health; density of physicians ALMP PLMP

Source: RAND Europe/The Work Foundation, 2009

Two datasets were used to undertake the analyses:

- for the general population, we used the sample in the European Working Conditions Survey (EWCS)
- for the older population (aged 50+), we used the sample in the Survey of Health, Ageing and Retirement in Europe (SHARE) micro-data.

SHARE offers fairly detailed health-related variables on individuals aged over 50 and thus provides us with an understanding of the role health plays in leaving the labour force later in life. EWCS has less detailed health-related information, though offers a more representative and inclusive sample of the working age population. As outlined in Table 4.1 we sourced data on country-level variables from the Organisation of Economic Co-operation and Development (OECD) dataset. These country-level variables allowed us to differentiate the provision of early intervention cross-country and examine how this influenced people’s ability to work and eventually labour market outcomes.

Additional factors linking to absenteeism

A number of factors besides early interventions correlate with absence. The EWCS and SHARE datasets provide us with personal (or micro-level) information about individuals such as marital status and age, which affect choices and health status by altering individuals’ incentives to stay in the labour market or retire early. We selected the variables to control for in our analyses based on those identified as important predictors of absence in existing literature [see Lusinyan and Bonato (2007) and theoretical underpinnings of absence in Brown and Sessions (1996)]. However, there was a slight differentiation between factors controlled for when studying the overall population as opposed to the 50+ population. Table 4.2 sets out these factors.

Because both personal (or micro-level) and country level (or macro-level) variables affect labour market choices and health status we also looked to include country-level variables in our models. In addition to the country-level data on early intervention we also included GDP per capita.

Table 4.2: Individual- and country-level control variables controlled for in general population and 50+ population

General population	50+ population
Personal variables	Personal variables
Gender	Gender
Age	Age
Marital status	Marital status
Income	Educational qualification
Permanent contract	Long-term illness
Hours of work	Depression
Country of residence	Country of residence
Country-level variables	Country-level variables
GDP per capita	GDP per capita

Source: RAND Europe/The Work Foundation, 2009

The next section describes the analyses that were conducted with the available data, along with the findings.

4.2 Analyses and findings

In this section we focus on the results from the analysis of the 50+ population data. The analysis of the general population data identified some statistically significant relationships, but the quality of the data casts doubt on the strength of the findings. In contrast, the findings for the 50+ population are more robust and described in more detail below. For a full description of the analysis please see the Technical Report.

The outcome variables included in the analyses had responses that were either ‘yes’ or ‘no’ (known as binary outcomes), thus we performed logistic regressions. Logistic regressions allow us to estimate the premium of early intervention (based on our proxies) that predict the outcomes (see bullet points below). Results are generated in terms of odds ratios. For each of the three absenteeism measures (for the aged over-50 group), the regression model estimates the probability of either:

- retiring early or not retiring early
- having a labour market status of sick or disabled (as opposed to employed, unemployed, caring, or other) or not
- reporting that they are afraid they will retire early due to health limitations or not.

Again all of the models controlled for the individual and country-level variables.[4] For the purposes of this report only the significant and stable findings for the logistic regression analyses are presented. The full results, including those on the controls, are provided in the Technical Report.

First, we present findings on early retirement. Here we found expenditure on health as a per cent of GDP to be the only significant predictor of early retirement. The results suggest that the odds of looking to retire early fall by a factor of 0.681 for every one-point increase in health expenditure (as expressed by a percentage of GDP). In other words, as health expenditure increases, the likelihood of looking to retire early decreases.

The next set of statistically significant results relates to being afraid of needing to retire early due to health problems. Here expenditure spent on ALMP (as a per cent of GDP) and total expenditure on health (as a per cent of GDP) were associated with fear of early retirement. However, we are cautious about placing too much emphasis on these findings as the fuller investigation of the results reveals some unusual activity in the data.[5] Nevertheless, to understand the findings we offer the interpretation of the odds ratios (Table 4.3). The model suggests that the odds of ‘being afraid will retire early due to health’ falls by a factor of 0.337 for a one-unit increase in ALMP and by a factor of 0.6–0.7 for a one-unit increase in health expenditure. The findings suggest that a greater share of GDP spent on ALMP and greater expenditure on health are associated with lower odds of respondents stating that they are afraid they will have to retire early due to health.

In order to complement this entire analysis, we regressed the absenteeism measures on individual-level, early-intervention variables. We controlled for the various additional factors such as gender, age, marital status, educational qualification, as outlined in table 4.2.[6]

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[4] In addition, all estimates include clustered standard errors; this increases the precision of our estimates and is encouraged when right-hand side variables are of a different level (ie. country-level) than the left-hand side variables

[5] The full results (see Technical Report) for this last set of regressions reveal the model ‘behaves very poorly’ because country fixed-effect coefficients make little intuitive sense. There are two possible explanations we offer for this: first, country-level, independent variables might in fact not be independent from each other and highly correlated; second, the explanation could stem from the fact that the model nearly predicts employment or being sick/disabled simply by country of residence. We tested for correlation to observe whether we have redundancy and we found, in fact, that country-level variables are highly correlated

[6] For full results on ‘wish had seen specialist earlier’ on the three absence outcomes, see the Technical Report. For full results on ‘pain and drug taking behaviour’ on the three absence outcomes, see the Technical Report

Table 4.3: Early intervention determinants for being afraid will have to retire early due to health problems, reported as odds ratios

	Model 1	Model 2	Model 3	Model 4
Active labour market programmes, as % GDP	0.337* (0.204)	0.510 (1.068)		
Total passive labour market benefits, as % of GDP		1.31e-10 (1.30e-08)		
Total expenditure on health, as % of GDP			0.608*** (0.0338)	0.706** (0.117)
Physician density				0.294 (0.423)

Note: Robust standard errors in parenthesis. *** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Source: RAND Europe/The Work Foundation, 2009

Comparing those looking to retire early from the labour market against those not looking to do so, results indicate (see Table 4.4 for coefficients) that the odds of looking to retire early are higher for those who wish they had seen a specialist earlier and for those taking drugs for their pain. Specifically, those who wish they had seen a specialist earlier are 37 per cent[7] more likely to report retiring early when controlling for other characteristics. Those taking joint pain or inflammation drugs for joint pain are nearly twice as likely[8] to be afraid they will have to retire early due to health problems.

Table 4.4: Looking to retire early, reported as odds ratios

	Model 5	Model 6
Wish would have seen a specialist earlier	1.371* (0.249)	
Taking joint pain or inflammation drugs for back pain (as opposed to not taking drugs and having pain)		1.957*** (0.178)

Note: Robust standard errors in parenthesis. *** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Source: RAND Europe/The Work Foundation, 2009

Turning to whether people are more likely to report an employment status of ‘sick or disabled’ as opposed to employed as one would expect, we again find significant predictors based on aspects of healthcare. Table 4.5 reports the odds of claiming the status of ‘sick or disabled’ as opposed to being employed. The results indicate that someone who wished they *had seen a specialist earlier* is more than twice as likely (2.23 times) to report being sick or disabled. Equally, statistically significant results suggest that the odds of reporting ‘being sick or disabled’ for individuals *taking joint pain or inflammation drugs for joint pain* were 28.4 per cent more likely than someone with pain who is not taking drugs.

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[7] The coefficient in the corresponding cell at Table 4.4 (for Model 5) indicates that the probability of retiring is 1.37 times more likely for those who wished they had seen a specialist earlier compared to all others

[8] (odds ratio = 1.957

Someone *taking drugs for their joint pain* also has double the odds (odds ratio = 2.073) of being afraid they will retire early for health reasons compared to someone who has joint pain, but is not taking drugs to mitigate that pain.

Table 4.5: Being sick or disabled (as opposed to employed), reported as odds ratios

	Model 5	Model 6
Wish would have seen a specialist earlier	2.231** (0.695)	
Taking joint pain or inflammation drugs for back pain (as opposed to not taking drugs & having pain)		1.284*** (0.102)

Note: Robust standard errors in parenthesis. *** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Source: RAND Europe/The Work Foundation, 2009

4.3 Conclusions

As mentioned at the outset of this section, the results for the generation population analysis were not reliable (consequently we do not report them here, but they can be seen in full in the technical report). We make two points in our conclusions in reference to that analysis:

- For the general population, our results are based on weak instruments of early intervention. This demonstrates a serious need for more data (ie longer time periods across more countries) on interventions that are distinctly ‘early’ interventions.
- In addition to increased data, multivariate analysis can only provide so much information when there is a weak identification strategy. A recommendation would be to evaluate an intervention that is precisely early intervention. This could be done through a pilot programme implementing early interventions; evaluation would require information gathered on people before the pilot (control group) and after the pilot (treatment group) and comparison of the outcomes of those two groups.

Thus, the results of econometric analysis of early intervention and absence shows for those aged 50 or older:

- ‘Wishing one had seen a specialist earlier’ makes a person 37 per cent more likely to be looking to retire early and more than twice as likely to report being sick or disabled (as opposed to employed).
- There is a high degree of difference in the identified outcomes when analysing specific versus general variables, for example seeing a health specialist early compared to taking measures for pain (ie drug-taking). These differences expose a clear need for data specifically on early intervention. The higher odds of reporting poor outcomes if taking drugs for pain may be due to the timing of drug-taking and may actually be showing that early intervention through drugs is helpful to improve absence, for example.

While these data cannot be taken as definitive proof that an early intervention premium can be derived in all cases, they provide sufficient evidence that future research that uses a more specific measure of early intervention might be able to explore the concept of a premium with more rigor.

5. Recommendations – towards a new deal for workers with MSDs?

In this final section we present recommendations based on our study. The audiences for these recommendations include the European Commission, national governments, clinicians, health economists, employers and their representatives, employees and their representatives and patient groups.

1. Better data on MSDs. Both the European Commission and National Governments need to collect and analyse better quality and consistent data on the prevalence, incidence and (especially early) costs of MSDs.
2. Active labour market policies must allow workers with MSDs to stay in work. This means finding the resources and implementing strategies to maximise job retention and early return to work. Core to this must be flexibility in welfare benefits, which allow those with partial work disability to earn income and claim benefits.
3. Promote and enforce legislation requiring reasonable workplace accommodations for workers with MSDs. Most countries have such legislation, but it is enforced only patchily. We know that adjusting work demands (the physical work environment, working time, psychological support etc) can make a big difference to the reintegration of people with MSDs.
4. Promote examples of good workplace preventative practice. Too many MSDs caused by work are preventable by better work organisation, job design and through ergonomic interventions. Many examples of good and effective practice exist. The European Commission and national governments should prioritise the active dissemination of good practice to support workplace prevention.
5. The EU MSD Directive Should Recognise Pre-existing MSDs. Many workers have MSDs which are not caused by work. The forthcoming Directive should explicitly recognise that these conditions also have an effect on productivity and the quality of working life. It should also recognise that workplace interventions can support job retention, return to work and vocational rehabilitation. The Directive should also recognise the link between MSDs and mental health.
6. National governments should ensure that primary care physicians are supported in making decisions about work disability. If early intervention is to be initiated, and if return to work for people with MSDs is to be seen as a legitimate clinical outcome by family doctors, more specialist education and support is needed to ensure that opportunities to act early are not lost.
7. National governments should consider adopting a version of the UK's Fit Note. This would encourage clinicians and employers to focus on the capacity workers with MSDs have rather than on their incapacity, and improve the flow of information between clinicians and employers. A shift in outlook is needed here if we are to change attitudes and behaviour to incapacity.
8. National governments should prioritise access to physical and psychological therapies for workers with MSDs. The evidence is clear – if people with MSDs can gain early access to treatments and therapies which help them to stay in, or return to, work then they should be made available. Timely interventions from physiotherapists and clinical psychologists can make a significant impact on return to work, and should be prioritised.
9. National governments should implement national care plans for people with MSDs. These frameworks should include measures to promote coordination and cooperation between health and social security institutions and employers. They should also include steps to intervene early and to prioritise early return to work.

10. Health Technology Assessment (HTA) should be allowed to take account of the wider societal benefits of treatments and therapies for MSDs. While not without its technical and philosophical issues, it is clear that treatment or therapy which can prolong the working lives of workers with MSDs may also generate benefits that are likely to accrue to the individual, their family and carers, society at large and to the wider economy, and go far beyond narrow clinical criteria.

Also, further research is needed in several areas, including:

- To collect better, more comprehensive data on MSD prevalence among the working age population in Europe. Without this, difficulties in deciding on priorities and resources will remain.
- To assess the cost-effectiveness of workplace-based interventions. The lack of evidence could be holding back the delivery of interventions. The benefits of this research are likely to accrue both to governments and employers, so could they perhaps co-fund research.
- To take stock of available guidelines on establishing the wider labour market and societal costs of MSDs. If guidelines fail to provide clarity on approaches to societal costs then researchers are less likely to complete such analysis.
- To assess the barriers to including a societal perspective in Health Technology Assessments (HTAs). This might explore the degree to which they are not included due to legislative barriers (as with NICE) versus preferences of agencies. This would help to identify where to focus efforts to get them included.
- Work programme of the new network of competent authorities on HTAs as planned under Article 17 to review jointly methodologies and consider setting out guidance on the wider social perspective. This could help build consensus at the European level, which could filter down to MS to implement at the national level.
- Longitudinal studies of disease progression with treatment to contribute to ‘better’ models and to test how far assumptions are correct. Beneficiaries of such research are likely to be both governments and pharmaceutical companies, so they could perhaps co-fund.

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Active labour market programmes (ALMPs): programmes targeted to registered unemployed, individuals at risk of involuntary job loss and individuals with reduced capacity to work. Some examples are public employment services and administration, training, job rotation and sharing, employment incentives, supported employment and rehabilitation, direct job creation and start-up incentives.

Ankylosing spondylitis (AS): a specific and progressive chronic rheumatic disorder that mainly affects the spine, but can also affect other joints, tendons and ligaments.

Back pain: a non-specific and episodic MSD that is often defined as pain localised below the twelfth rib and above the inferior gluteal folds, with or without leg pain. Back pain is episodic and generally self-limiting. It can be recurrent if several episodes occur in 1 year for a duration of less than 6 months, acute if an episode lasts for less than 6 weeks, sub-acute (7–12 weeks) and chronic if it endures for over 12 weeks.

Disability-adjusted life years (DALYs): a measure of the overall disease burden, which attempts to tally the complete burden that a particular disease exacts. Key elements include the age at which disease or disability occurs, how long its effects linger and its impact on quality of life. One DALY, therefore, is equal to 1 year of healthy life lost.

General physicians (GPs): physicians who diagnose and treat physical and mental illnesses, disorders and injuries. They recommend preventive action based on the scientific principles of modern medicine. Their practice is not limited to certain disease categories or methods of treatment. They often provide medical care to individuals and families in a community setting.

Health Technology Assessment (HTA): an assessment of health technologies through a number of domains, which provide a wide framework for analysis. The domains include the following: health problem and current use of technology; description and technical characteristics of technology; accuracy; clinical effectiveness; safety; costs and economic evaluation; ethical analysis; organisational aspects; social aspects; and legal analysis. Thus the economic evaluation component is just one of the relevant domains in considering the adopting of an intervention in a health care system. This is in line with EUnetHTA common core model of HTA, https://fio.stakes.fi/htacore/handbook.html.

Musculoskeletal disorders (MSDs): a group of disorders that spans over 200 conditions of the bones, joints and connective tissue. MSDs affect many European workers, bringing them chronic pain, fatigue, disabling inflammation of joints, severely reduced functioning, temporary but disabling incapacity and, on occasions, permanent and irreversible bone and joint damage.

Passive labour market programmes (PLMPs): partial unemployment benefits that compensate loss of wages due to short-time working arrangements where the employer and employee relationship continues. Part-time unemployment benefits provide assistance to individuals working part-time who have lost a full-time job and are seeking to work more hours. They are targeted to registered unemployed, individuals at risk of involuntary job loss and individuals with reduced capacity to work.

Psoriatic arthritis (PsA): a specific and progressive rheumatic condition characterised by inflamed joints that become tender, swollen and painful on movement and often occurs after the appearance of psoriasis. Typically the joints are stiff after resting, early in the morning or while resting in the evening. Tissues such as ligaments and tendons around the joints may also be involved. Inflammation of tendons or muscles (such as tennis elbow and pain around the heel) are also features in those with psoriatic arthropathy. In approximately 80 per cent of cases the arthritis develops after the appearance of psoriasis.

Rheumatoid arthritis (RA): a specific and progressive MSD that mainly affects the hand and feet joints, but may also occur in the elbow, knee or other synovial joints. Symptoms include fatigue, weight loss and morning stiffness.

Specialists: physicians who diagnose and treat physical and mental illnesses, disorders and injuries using specialised testing, diagnostic, medical and surgical techniques based on the scientific principles of modern medicine. They specialise in certain diseases, types of patients or methods or treatment. In this context, specialists refer mainly to rheumatologists, orthopaedists and surgeons.

Work-related upper limb disorders (WRULDs): the common consensus is that symptoms of WRULDs can present in the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness and tingling sensations in the affected area. These conditions can be caused, or exacerbated, by working which involves repetitive movements, prolonged keyboard use, heavy lifting, poor posture or other forms of work-related physical strain. Examples of WRULDs include: epicondylitis (tennis or golfer’s elbow); carpal tunnel syndrome; repetitive strain injury (RSI), de Quervain’s syndrome; tendinitis of the shoulder; and neck pain.

Appendix B: Early intervention to treat musculoskeletal disease in Europe: Evidence on economic benefits

Introduction

This appendix presents the results of a rapid evidence review on the economic benefits from treatment of MSDs (evidence relating to the burden of MSDs is set out elsewhere in the project). The intention was to bring together the published literature, which explored the cost-effectiveness of two main treatment options:

- Medicines;
- Interventions that include a workplace-based element.

The underlying hypotheses are that there:

1. Is an early intervention 'premium' (a benefit over and above late intervention, and that this outweighs the incremental costs of early intervention);
2. Are additional benefits when health, welfare and work are aligned to support early intervention.

This rapid evidence review explores the degree to which the first hypothesis has been analysed in the available evidence to date and the main findings of this evidence base.

Identifying the evidence

As part of a wider literature search for the project as a whole, 15 articles were found that covered the economic benefits of intervention. Reference checking of these 15 papers identified a further 27 papers.[1] Of these, five could not be obtained in time for inclusion in this rapid review.

Papers are included where they are written in English. Papers just focusing upon features of interventions with no discussion of the economic costs and benefits are excluded.

Summary of available literature and evidence on economic benefits of MSD treatment

The rapid evidence review revealed that there are just two papers that could be confidently considered early intervention.

Given this, the rapid evidence review was expanded to cover papers that consider the economic benefits of interventions even where they may not be 'early'. This is to explore the degree to which 'late' intervention is cost-effective or not. The intuition is that if late intervention is cost-effective, then early intervention (which is likely to minimise progression to more severe disease) is likely to be even more cost-effective.[2]

Table 1 below provides a summary of two studies focused on early intervention.

Table 2 provides a summary of studies that include discussion of the economic benefits of treatment for MSDs and where they appear to be late intervention.

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[1] Limited time has prevented exhaustive searching. Further rounds of reference checking were not conducted.

[2] This assumes that the cost(s) of early intervention do not outweigh the benefits

Table 1: Summary of literature on economic benefits of early treatment for MSDs (in alphabetical order by author)

Author, year	Country	Disease	Intervention	Analytical approach	Main conclusions	Cost-effective?
Bultmann et al. (2009)	Denmark	MSD	Effects of coordinated and tailored work rehabilitation (CTWR) with conventional case management (CCM) on return to work of workers on sick leave. CTWR consists of a work disability screening by an interdisciplinary team followed by the collaborative development of a RTW plan. Workers approached after 4–12 weeks of sickness absence.	Case control study (follow-up 12 months).	Number of sickness absence hours was significantly lower in the CTWR group versus the control group. The total costs saved in CTWR participants compared to controls were estimated at US$10,666 per person at the12 months follow-up.	Highly cost-effective as appears it delivered a net benefit.
National Audit Office (2009)	UK	RA	Early treatment (DMARDS within 3 months) versus current treatment.	Cost-utility study including productivity (indirectly captured via HAQ and converted to QALYs).	Higher costs to the NHS expected from between £900 to £1,600 over 5 years. Likely reduction in lost employment ranging from 30 to 42 days over 5 years. An expected gain of 0.14 to 0.19 gain in QALYs.	Highly cost-effective as net cost saving if include productivity.

Source: Leela Barham. RA = Rheumatoid arthritis; MSD = Musculoskeletal disease; QALY = Quality-adjusted life year; ICER = Incremental cost-effectiveness ratio; HAQ = Health assessment questionnaire; DMARDS = Disease-modifying antirheumatic drugs

Table 2: Summary of literature on economic benefits of 'late' treatment for MSDs (in alphabetical order by author)

Author, year	Country	Disease	Intervention	Analytical approach	Main conclusions	Cost-effective?
Abásolo et al. (2005)	Spain	MSD	Intervention group received a specific programme, administered by rheumatologists, in which care was delivered during regular visits and included three main elements: education, protocol-based clinical management, and administrative duties versus standard primary care management, with referral to specialised care if needed.	Randomised controlled trial (follow-up 12 months).	Temporary work disability episodes shorter in the intervention group than in the control group (mean 26 days compared with 41 days; P < 0.001). Fewer patients received long-term disability compensation in the intervention group (0.7%) than in the control group (1.3%) (P < 0.005). Direct and indirect costs were lower in the intervention group than in the control group. To save 1 day of temporary work disability, $6.00 had to be invested in the programme. CBR: 1:11. Net benefit was in excess of $5million.	Highly cost-effective as it delivered a net benefit.
Bansback et al. (2005a)	Sweden	RA	Adalimumab vs traditional disease-modifying antirheumatic drugs and the other tumour necrosis factor (TNF) antagonists. Most patients had disease duration > 8 years.	Cost-utility analysis (excl. indirect costs).	Adalimumab plus methotrexate showed the greatest number of QALYs gained (2.1 to 2.3). Costs results were between €35,000 and €42,000.	Cost-effective at prevailing thresholds for cost per QALY.

Author, year	Country	Disease	Intervention	Analytical approach	Main conclusions	Cost-effective?
Bansback et al. (2005b)	Various	RA	Anti-TNFs (tumour necrosis factor).	Review	Analysis for 6 months to 1 year treatment found ICER US$34,800–96,166 per ACR 70% response. Analysis for longer treatment found ICER US$26,800–40,308 per ACR 70% response (patient lifetime, 10 years respectively).	May be cost-effective at prevailing threshold for cost per QALY.
Bansback et al. (2006)	UK	PsA	Etanercept vs combination therapy with methotrexate and ciclosporin, vs leflunomide.	Cost-utility analysis (excl. indirect costs).	Etanercept resulted in 0.82 more QALYs when compared with combination therapy with methotrexate and ciclosporin, and 0.65 more QALYs in comparison with leflunomide. Cost per QALY of £28,189 for both ciclosporin and leflunomide, Long-term perspective suggests cost-effective, however considerable uncertainty.	May be cost-effective at prevailing threshold for cost per QALY.
Barbieri et al. (2005)	UK	RA	Infliximab plus methotrexate (MTX) compared with MTX alone.	Cost-utility analysis (excl. indirect costs).	Infliximab plus MTX had an ICER of £33,618 per QALY gained.	Cost-effective at prevailing thresholds for cost per QALY.
Brennan et al. (2006)	UK	RA	DMARD sequence with etanercept third line against the same sequence excluding etanercept.	Cost-utility analysis (sensitivity analysis included indirect costs).	Cost per QALY £16,330.	Cost-effective at prevailing thresholds for cost per QALY. Highly cost-effective if indirect costs included.
Boonen et al. (2006)	Unclear	AS	Etanercept and infliximab compared with usual care.	Cost-utility analysis.	€42,914 and €123,761 per QALY for etanercept vs usual care and €67,207 to €237,010 for infliximab.	Not cost-effective at prevailing thresholds for cost per QALY.
Botteman et al. (2007)	UK	AS	Adalimumab vs conventional therapy.	Cost-utility analysis (sensitivity analysis included indirect costs).	30-year ICER of adalimumab vs conventional therapy was estimated at £23,097/QALY. Including indirect costs resulted in £5,093/QALY.	Cost-effective at prevailing thresholds for cost per QALY. Highly cost-effective if indirect costs included.

Author, year	Country	Disease	Intervention	Analytical approach	Main conclusions	Cost-effective?
Chen et al. (2006)	UK	RA	Adalimumab, etanercept and infliximab.	Systematic review.	For use in accordance with current NICE guidance as the third DMARD in a sequence of DMARDs, the base-case ICER was around £30,000 per QALY in early RA and £50,000 per QALY in late RA.	Cost-effective when used last in sequence.
Choi et al. (2000)	US	RA	1) etanercept 1 MTX 2) etanercept monotherapy 3) cyclosporine 1 MTX 4) triple therapy (hydroxychloroquine, sulfasalazine and MTX) 5) continuation of MTX monotherapy and 6) no second-line agent.	Cost-effectiveness analysis. Effectiveness measured by: American College of Rheumatology 20% response criteria (ACR 20); and weighted average of proportions of patients achieving responses of ACR 70, ACR 50 and ACR 20 (ACR 70 weighted response) (excluding indirect costs).	15 mg/week MTX is cost-effective for achieving ACR (American College of Rheumatology) 20 or ACR 70WR in MTX-naive RA over a 6-month period, then most likely so is triple therapy in MTX-resistant RA. Whether etanercept 1 MTX is cost-effective depends on whether $34,800/ACR 70WR (or $42,600/ACR 20) over a 6-month period is considered acceptable.	Cost-effective depending upon willingness to pay.
Choi et al. (2002)	US	RA	5 monotherapy options for patient with MTX-naive RA: (1) etanercept (2) leflunomide (3) MTX (up to 15mg weekly) (4) sulfasalazine (SSZ) and (5) no second line agent.	Cost-effectiveness analysis. Effectiveness measured by: American College of Rheumatology 20% response criteria (ACR 20); and weighted average of proportions of patients achieving responses of ACR 70, ACR 50 and ACR 20 (ACR 70 weighted response) (excluding indirect costs).	Etanercept, cost US$41,900 per ACR 20 and US$40,800 per ACR 70 WR compared with SSZ and MTX, respectively.	Cost-effective depending upon willingness to pay.

Author, year	Country	Disease	Intervention	Analytical approach	Main conclusions	Cost-effective?
Chiou et al. (2004)		RA	Monotherapy and combination therapy using etanercept, anakinra, infliximad, adalimumab and MTX.	Cost-effectiveness analysis. Effectiveness measured by American College of Rheumatology response criteria (excluding indirect costs and excluding reductions in joint replacement etc).	US$13,387 cost per QALY for etanercept. US$7925 cost per QALY for etanercept with MTX.	Cost-effective at prevailing thresholds for cost per QALY.
Clark et al. (2003)	UK	RA	Anakinra.	Cost-utility analysis (excluding indirect costs).	£106,000/QALY to £604,000/QALY.	Not cost-effective at prevailing thresholds for cost per QALY.
Gladman and Brown (2008)	Various	Rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis and Crohn’s disease	TNFs vs traditional treatments.	Review of pharmacoeconomic studies (likely studies excluded indirect costs).	Incremental cost per QALY between €34,167–65,499 (depending upon exact comparator and disease score) in RA based on modelling from clinical trials. Modelling from naturalistic data £24,000/QALY in UK.	Cost-effective at prevailing thresholds for cost per QALY.
Goossens et al. (1998)	Netherlands	Low back pain	Operant treatment included exercise and partner involvement included in both interventions. Cognitive programme with relaxation treatment included sessions with psychologist (OPCOM). Group discussion treatment included group discussion with music (OPDIM). These were compared with usual care (USUAL). Intervention given to those with low back pain >6mnths excl. AS.	RCT and cost-consequence analysis incl. indirect costs.	OPCOM direct programme cost US$9196.06; OPDIM direct programme cost US$8606.66; USUAL direct programme cost US$8667.26. No statistical differences in total costs incl. indirect costs. No significant difference between the two experimental groups and between the experimental groups and USUAL, either immediately after treatment or after 6 and 12 months in utility scores.	No additional benefits from additional costs of interventions. However may have been underpowered.
Goossens et al. (1997)	Various	Low back pain	Various.	Literature review.	Because of differences in the measurement of costs and outcomes and other methodological limitations, it is impossible to draw conclusions in favour of any one type of programme.	Unclear cost-effectiveness.

Author, year	Country	Disease	Intervention	Analytical approach	Main conclusions	Cost-effective?
Jobanputra et al. (2001)	UK	RA	Cost-utility analysis (excluded indirect costs, and some other benefits such as potential reductions in joint replacement, hospitalisation, mortality)	Cost-utility analysis (excluded indirect costs, and some other benefits such as joint replacement, hospitalisation, mortality).	£83,000 per QALY for etanercept and approximately £115,000 per QALY for infliximab. These figures reduced to £72,000 per QALY for etanercept and £95,000 for infliximab if used last in the sequence of DMARDs.	Not cost-effective at prevailing thresholds for cost per QALY.
Jobanputra et al. (2002)	UK	RA	Systematic review and cost-utility analysis (excluded indirect costs, and some other benefits such as potential reductions in joint replacement, hospitalisation, mortality)	Systematic review and cost-utility analysis (excluded indirect costs, and some other benefits such as joint replacement, hospitalisation, mortality).	£83,000 per QALY for etanercept and approximately £115,000 per QALY for infliximab. These figures reduced to £72,000 per QALY for etanercept and £95,000 for infliximab if used last in the sequence of DMARDs.	Not cost-effective at prevailing thresholds for cost per QALY.
Kobelt et al. (2003)	UK and Sweden	RA	Infliximab.	Cost-utility analysis.	Cost per QALY gained was SEK32,000 (€3,440) in Sweden and GBP£21,600 (€34,800) for 1 year of treatment. With 2 years of treatment, the costs per QALY gained were SEK150,000 (€16,100) and GBP£29,900 (€48,200). Estimates include indirect costs.	Cost-effective at prevailing thresholds for cost per QALY.
Kobelt et al. (2005)	Sweden	RA	Combination treatment with etanercept plus methotrexate in comparison with monotherapies.	Cost-utility analysis.	Cost per QALY gained was €37,331 for combination treatment and €46,494 for monotherapy. This includes indirect costs.	Cost-effective at prevailing thresholds for cost per QALY.
Lahiri et al. (2005)	WHO regions	Back pain	Training (T), engineering controls (EC), engineering controls and training (EC&T) and a comprehensive full ergonomics programme (EP).	Global simulation model (likely excluded indirect costs).	Training was the most cost-effective from $74 per healthy life years gained to approximately $567. EP is more costly but also more effective, so where resources are available this is the preferred intervention.	Cost-effective at prevailing thresholds for cost per healthy life years gained.

Author, year	Country	Disease	Intervention	Analytical approach	Main conclusions	Cost-effective?
Loisel et al. (2002)	Canada	Back pain	Sherbrooke model of management of subacute occupational back pain, combining an occupational and a clinical rehabilitation intervention vs standard care.	Randomised controlled trial (follow up 6.4 years on average).	Mean cost of Sherbrooke model $7,434 vs $9,562 for standard care. Mean cost of disease consequences $7,060 vs $23,517 for standard care. Mean number of days on full benefits (DFB) because of back pain for Sherbrooke model 125.6 vs 418.3 days for standard care.	Cost-effective vs standard care.
Maetzel et al. (2002)	Canada	RA	Adding leflunomide (LEF) to a sequence of disease-modifying antirheumatic drugs (DMARDs).	Cost-utility analysis (excluding indirect costs).	$13,096 per additional year of response to treatment, and cost-utility ratios between $54,229 and $71,988 per quality-adjusted life year gained.	Cost-effective at prevailing cost per QALY thresholds.
McCabe et al. (1998)	UK	RA	5 NSAIDs (nabumetone, diclofenac, ibuprofen, piroxicam and naproxen).	Cost per life gained analysis (excluding indirect costs).	Cost per life-year gained (LYG) from using nabumetone rather than ibuprofen ranged between £1,880 and £2,517.	Additional cost of newer NSAIDs may be justifiable in terms of the mortality and morbidity gains associated with the new lower-risk NSAIDs.
Mittendorf (2008)	Germany	RA	Adalimumab Most patients had disease duration > 12 years.	Pre-post open-label study (follow-up 144 weeks).	Adalimumab improved many aspects of the patient's burden, including morning stiffness, pain and work impairment and productivity. 6 months prior to baseline av. 146 days absent, 6 months treatment, av. 118 days absent per patient.	Not formally explored however evidence of lower sickness absence, which is a relevant outcome for societal perspective in cost-effectiveness.

Author, year	Country	Disease	Intervention	Analytical approach	Main conclusions	Cost-effective?
Moore et al. (2004)	UK	RA and OA	Etoricoxib vs non-selective NSAIDs.	Cost-utility analysis (excluding indirect costs).	Etoricoxib is cost-saving compared with non-selective NSAIDs plus PPIs or non-selective NSAIDs plus misoprostol. Etoricoxib is cost-effective in terms of the incremental cost per QALY gained for non-selective NSAIDs alone (£19,766) and for non-selective NSAIDs plus H2 antagonists (£9,350).	Cost-effective at prevailing thresholds for cost per QALY.
Moreland (2004)	Various	RA	Anti-TNF-α.	Review of clinical studies.	Anti-TNF-α agents are effective in reducing disease activity and delaying the progression of structural damage in patients with RA who have failed DMARD therapy. Etanercept is also effective as first-line therapy in patients with early RA and may be more beneficial early in the disease process. Likely that early treatment will reduce disability and associated long-term costs including increasing employment.	Potentially highly cost-effective.
Nuijten et al. (2001)	Netherlands	RA	Etanercept (administered at home by subcutaneous injection) vs infliximab (intravenous infusion in a hospital outpatient setting).	Cost study.	Treatment with infliximab is more expensive than treatment with etanercept with total costs of NLG45 115 (US$18,046) and NLG31 621 (US$12,648) (a 42.7% increase).	Highly cost-effective as cost saving.
Regier et al. (2007)	Various	Rheumatoid arthritis, psoriatic arthritis or ankylosing spondylitis	Anti-TNF-α.	Review of pharmacoeconomic studies (likely studies excluded indirect costs).	Comparison of findings from studies is complicated due to variety of approaches taken (eg different time horizons, outcome measures, different perspective for costs etc). Cost-effectiveness depends upon: • Time horizon (the longer the time horizon the lower the cost per QALY); • Certainty of assumptions.	Uncertain cost-effectiveness.

Author, year	Country	Disease	Intervention	Analytical approach	Main conclusions	Cost-effective?
Schadlich et al. (2005)	Germany	RA	Leflunomide into sequential therapy, consisting of the most frequently used disease-modifying antirheumatic drugs (DMARDs).	Cost-utility analysis.	€8,301 per QALY gained, after 3 years.	Cost-effective at prevailing thresholds for cost per QALY gained. Cost-saving when consider both direct and indirect costs.
Spalding and Hay (2006)	US	RA	TNFα inhibitors (both as monotherapy and in combination with methotrexate) as first-line agents versus methotrexate (monotherapy).	Cost-utility analysis (excluding indirect costs).	Adalimumab, etanercept, adalimumab plus methotrexate and infliximab plus methotrexate had incremental cost-effectiveness ratios (ICERs) vs methotrexate monotherapy of US$63,769, US$89,772, US$194,589 and US$409,523 per QALY, respectively.	May be cost-effective depending upon prevailing cost-effectiveness ratio.
Waddell et al. (2009)	Various	Various including MSDs	Various.	Best evidence synthesis.	Structured vocational rehabilitation interventions are effective (and limited evidence that they are cost-effective) between about 1 month and 6+ months sickness absence (though the exact limits are unclear).	May be cost-effective.
Wailoo et al. (2006)	US	RA	Etanercept, adalimumab or anakinra in comparison to infliximab alone.	Cost-utility analysis (excluding indirect costs).	The lowest incremental cost per QALY is $133,000 for a strategy of etanercept followed by adalimumab.	Not cost-effective at prevailing cost per QALY thresholds.
Wong et al. (2002)	US	RA	Infliximab plus methotrexate.	Cost-utility analysis.	US$30,500 per QALY gained, considering only direct medical costs. Including indirect or productivity costs, $9,100 per QALY gained.	Highly cost-effective at prevailing thresholds for cost per QALY.

Source: Leela Barham. CBR = Cost-benefit ratio; NSAID= nonsteroidal anti-inflammatory drugs; RA = Rheumatoid arthritis; MSD = Musculoskeletal disease; QALY = Quality-adjusted life year; ICER = Incremental cost-effectiveness ratio; MTX = Methotrexate

Broad observations and discussion

Although this is a rapid evidence review[1], it nevertheless highlights some common themes.

Relatively few studies are available on the economic benefits of early intervention

In the studies included in this rapid review, only two explicitly considered early intervention (Bultmann et al., 2009; NAO, 2009). The vast majority of studies do not discuss the timing of the intervention. Rather, they may refer to the time since diagnosis. (This can be a significant length of time, eg > 8 years in Bansback, 2005a and > 12 years in Mittendorf, 2008.) It appears that there is currently a gap in our understanding of the cost-effectiveness of early intervention across Europe.

This lack of published economic evidence may be due to clinical evidence becoming available only relatively recently on the additional benefits of early intervention.[2] There is likely to be a lag between this clinical evidence becoming available and these findings being incorporated into economic modelling. The two studies that do look at early intervention were both published in 2009 (NAO, 2009; Bultmann et al., 2009).

It may also reflect the degree to which decision-makers have already made decisions regarding access to some of these interventions. If late intervention is considered value for money, then early intervention is also likely to be value for money (assuming that there are not significant costs to early intervention). Decision-makers therefore may not require further evidence of the economic benefits of early interventions in order to recommend their use. However, this may not provide sufficient evidence to ensure that early intervention is proactively provided. This may be the case for local decision-makers such as employers who may or may not invest in workplace interventions.

Studies tend to focus on RA versus other MSDs

The studies included in this review focused on RA (26 of the 36 studies). It is not clear based on this rapid review why this is. However, perhaps it reflects the priorities of decision-makers to focus on RA versus other MSDs, or it may be that treatments have tended to be shown to be effective first in RA versus other MSDs. It seems that there may be a gap in our understanding of the cost-effectiveness of interventions to treat other MSDs. It may also be worthwhile exploring how priorities are set in terms of the disease focus of the health care system and the welfare system. It may also be useful to explore how far the priorities of the health care system and the welfare system coincide. For example, if the health care system focuses upon only direct costs of disease in prioritorising interventions, this may result in different priorities to those of the welfare system, if they focus not only on direct costs but indirect costs as well.

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[1] It may not have identified and captured all the relevant literature. However we note that many of the same references reappear in the references of reviewed papers. Future work could conduct a systematic review including searching electronic databases such as Econlit and contacting authors to identify any potential grey literature on the economics of early intervention.

[2] There is some evidence to support the clinical benefits of early intervention, see Nell V.P.K. et al. Benefit of very early referral and very early therapy with disease-modifying anti-rheumatic drugs in patients with early rheumatoid arthritis. **Rheumatology**, 2004; 43: 906–914 and Reisine S. et al. Work Disability Among Two Cohorts of Women With Recent-Onset Rheumatoid Arthritis: A Survival Analysis Arthritis & Rheumatism. **Arthritis Care & Research**, Vol. 57, No. 3, April 15, 2007, pp 372–380 and Puolakka K. et al. Impact of Initial Aggressive Drug Treatment With a Combination of Disease-Modifying Antirheumatic Drugs on the Development of Work Disability in Early Rheumatoid Arthritis. **Arthritis & Rheumatism** Vol. 50, No. 1, January 2004, pp 55–62 and Keat A. C. et al. Influence of biologic therapy on return to work in people with work disability due to ankylosing spondylitis. **Rheumatology,** 2008; 47: 481–483

Studies tend to focus on medicines versus other interventions for MSDs

The majority of studies included in this rapid review are focused upon medicines, and not on other interventions, some of which may be provided in the workplace.[1] It seems likely that many of the published cost-effectiveness analyses are used to inform the decisions of agencies that have an explicit interest in using cost-effectiveness to recommend or not recommend interventions in state health care systems. Agencies such as NICE (the National Institute for Health and Clinical Excellence) in the UK[2] and TLV (The Dental and Pharmaceutical Benefits Agency, formally LFN) in Sweden will either commission independent academic economic modelling or draw on pharmaceutical company submissions to inform decisions on the use or otherwise of medicines in the health care system. This may skew the evidence base towards medicines versus other interventions where there are less likely to be interested sponsors of the intervention and where there may be fewer formal barriers such as health technology assessment (HTA) to implementation. However, perhaps a lack of economic evidence on other interventions acts as a barrier to convincing decision-makers to adopt workplace-based interventions. This could be further explored.

Although there are some examples of agencies that will also consider other interventions (and NICE does consider diagnostics and broader public health interventions), some will focus just on medicines ([as does the SMC [Scottish Medicines Consortium] in Scotland). However, even those agencies whose remit covers more than medicines may not have a balance across different types of interventions. For example, 75 per cent of published National Institute for Health and Clinical Excellence (NICE) appraisals between March 2000 and June 2006 were for pharmaceuticals (Linden et al., 2007). This means that there is likely to be a bias in the availability of economic analysis towards medicines and away from other interventions. That could skew the focus of decision-makers and it could mean that other potentially more cost-effective interventions are not adopted as often as they might be if such analysis were available. There is evidence that other interventions are cost-effective, for example Pilgrim et al. (2008), in their secondary modelling for NICE to assess the cost-effectiveness of generic interventions to reduce the number of employees on sick leave, found that:

- Usual care had an incremental cost per QALY gained of £2,697;
- Workplace intervention had an incremental cost per QALY gained of £2,333;
- Physical activity and education (with no workplace intervention) had an incremental cost per QALY gained of £2,515;
- Physical activity and education with workplace visit had an incremental cost per QALY gained of £1,393.

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[1] The relative lack of economic evaluation of workplace interventions is a general finding of many reviews that look at the impact of interventions in the workplace. See Goetzel R. Z. and Ozminkowski R. J. The health and cost benefits of work site health promotion programs. **Annu Rev Public Health**, 2008. 29: 303–23; Preventing Noncommunicable Diseases in the Workplace through Diet and Physical Activity. **World Economic Forum and World Health Organisation** (May 2008). Tompa E. et al. A Systematic Review of Disability Management Interventions with Economic Evaluations. **J Occup Rehabil** 2008 18: 16–2

[2] NICE covers England and Wales. NICE Multiple Technology Appraisal guidance covers Scotland. Northern Ireland may also adopt NICE guidance. Barham L. Single Technology Appraisals by NICE: Are They Delivering Faster Guidance to the NHS? **Pharmacoeconomics**. 2008; 26 (12): 1037–1043

This suggests that perhaps an integrated approach offers the most cost-effective intervention. This is a comparatively low cost per QALY in the UK where a threshold of between £20,000 to £30,000 is often cited (The Stockholm Network, 2008). It also reinforces the potential benefit from joined-up work across the health and welfare systems and with workplaces.

Medicines are likely to be cost-effective for treating MSDs

There is a range of cost-effectiveness estimates available for medicines to treat MSDs. There are important assumptions being made in various models that explore medicines to treat MSDs (including length of time treated and how far results from RCTs can be applied into the future). However, there appears to be an increasing evidence base that suggests that many medicines are cost-effective. The most recent review by Gladman and Brown (2008) highlights that recent modelling in the UK using naturalistic data suggests that TNFs versus traditional treatments can result in a incremental cost per QALY of £24,000.

It is also relevant to note that many of these cost-effectiveness analyses do not take into account wider socio-economic factors, such as the impact upon carers and the impact upon the individuals' ability to work. Those studies that include these impacts demonstrate even greater cost-effectiveness (discussed in more detail below).

Interventions including a workplace component are likely to be cost-effective for treating MSDs

There is one study that suggests that early non-medicine interventions can also be cost-effective. Bultmann et al. (2009) consider the impact of work disability screening by an interdisciplinary team followed by the collaborative development of a RTW plan. Workers were approached after 4–12 weeks' sickness absence. The total costs saved using this approach were estimated at US$10,666 per person at the 12 months follow-up. This was an intervention delivered in Denmark and it is unclear how far this can be generalised to other countries.

Cost-effectiveness analysis of medicines for MSDs use a narrow viewpoint

The majority of studies included in this rapid review take a relatively narrow viewpoint when considering cost-effectiveness. They tend to focus on the health care payor perspective. They do not allow for the potential for wider costs and benefits to be affected by the intervention (such as the impact upon the ability to work, sickness absence or the impact upon carers).

To a large degree this is likely to reflect the perspective being required by the decision-maker. NICE for example is limited to taking the health and personal social services perspective in its technology appraisals.

However, when a wider perspective is taken, the impact on cost-effectiveness can be significant. For example, the NAO acknowledges in its analysis that adopting early intervention (DMARDs provided within three months) is cost increasing if you take the NHS perspective (as seen in NICE's estimates of the budget impact of moving to early intervention[3]). It estimates that on average, a patient treated in three months would increase the cost to the NHS by

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[3] NICE (2009a)

£900 over a five-year period; if the patient was treated with the step-down regime, the cost could rise by up to £1,600 for the NHS. The NAO analysis also includes wider benefits including productivity. It estimated that early treatment would bring about a reduction in lost employment of 30 days over the five years for a person of working age. For a patient treated with the step-down strategy, there could be a reduction of 42 days over five years. The NAO estimates that the cost of treating an additional 10 per cent of new patients a year (2,600) within three months would be around £11million. For those of working age, this earlier treatment could deliver productivity gains for the economy of around £31million due to reduced lost employment and reduced sick leave.

An increase in cost-effectiveness when including indirect costs does not just apply to early intervention, but also to late intervention. For example, Botteman et al. (2007) in their analysis of adalimumab for treating AS in the UK found a 30-year ICER of £23,097/QALY. This changed to £5,093/QALY when indirect costs were included. Similarly, Wong et al (2002) in their analysis of infliximab plus methotrexate in the US found an ICER of US$30,500 per QALY considering only direct medical costs. Including indirect and productivity costs resulted in a US$9,100 per QALY gained estimate.

There remains significant debate about the inclusion or exclusion of such wider impacts. Current principles for HTA suggest that the wider societal perspective should be adopted (The International Group for HTA Advancement, 2008). However, there are concerns that this could not only be methodologically challenging (since there is debate over the appropriate method), but also potentially disadvantage particular groups in society (such as the elderly, young or those who are unlikely to work due to their illness) (Kennedy, 2009).

Limitations of the evidence base and the need for further research

Although this is a rapid review and further searches could have revealed further relevant studies, there does appear to be some limitations to the current evidence base. The papers reviewed here all have a number of common features. They draw on the evidence available at a point in time and must make a number of assumptions in order to estimate cost-effectiveness. The degree to which these assumptions (for example clinical adherence to guidelines for treatment, behaviour outside of trial settings etc) are borne out in reality could therefore affect the resulting cost-effectiveness. For example, there is some evidence that the outcomes of patients treated by generalists versus specialists are different.[1]

Many of the authors recognise these challenges. Many highlight the need for further research to improve the evidence base and to refine the available models of cost-effectiveness.[2] This includes observational studies to understand the impact of interventions on long-term disease progression (and to assess how accurate modelling assumptions have been) and on clinician adherence to guidelines for treatment.

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[1] Soloman et al. (1997)

[2] See for example Bansback et al. (2006) and Brennan et al. (2004)

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Appendix C: Benchmarking grid

The Fit for Work Europe study has looked across 23 European countries plus Israel and Canada. This approach allows us to explore how far early intervention is implemented across Europe. It also enables us to see how far we may identify both enablers and barriers to early intervention given the different approaches to policies that affect the labour market, the welfare system and the health care system. To explore this we have looked widely at a number of indicators covering the:

- Labour market;
- Welfare system;
- Health care system.

The data presented below come from various international data sources. We used 2005 data to allow for comparisons across countries for a number of different indicators. The data mainly come from the OECD. However, where OECD data was not available the data was supplemented with Eurostat data. We present a selection of indicators below.

	GDP per capita in PPP	Percentage of the population working age	Unemployment rate (%)		Long term unemployment rate, % of unemployed	Average age of withdrawal from the labour market		Labour productivity per hour worked, GDP in PPS	Hourly labour costs
			Male	Female		Male	Female		
Austria	$33,496	67.7	4.9	5.5	23.3	59.1	58.1	100.2	€26.23
Belgium	$32,063	65.6	7.7	9.5	51.6	59.3	58.1	123.4	€30.73
Canada	$35,002	69.3	7.0	6.5	9.6	63.3	61.5	-	-
Croatia	-	66.9*	-	-	58.4*	60.5*		-	-
Czech Republic	$20,366	71.0	6.5	9.8	53.6	61.5	58.4	51.7	€6.63
Denmark	$33,196	66.1	4.4	5.3	25.9	64.1	61.4	101.6	€31.98
Finland	$30,695	66.7	8.2	8.6	24.9	60.5	60.1	94.9	€26.70
France	$29,759	65.1	8.4	10.2	41.4	58.6	59.4	116.2	€29.29
Germany	$31,380	66.9	11.2	10.0	54.1	61.6	60.7	113.0	€27.20
Greece	$24,928	67.3	6.2	15.3	53.7	62.4	61.2	71.2	-
Ireland	$38,693	68.3	4.6	4.0	34.3	65.2	65.3	105.9	-
Israel	$23,207	-	6.2	10.0	52.2	-	-	-	-
Italy	$28,122	66.5	9.5	32.5	32.5	60.4	60.9	90.4	€21.39
Lithuania	-	67.8*	8.2*	8.3*	52.5*	60.0*		43.1	€3.56
Netherlands	$35,111	67.5	4.4	5.0	40.1	60.3	60.5	121.2	€27.41
Norway	$47,319	65.6	4.8	4.4	9.5	63.3	61.8	159.3	-
Portugal	$20,656	67.4	6.8	8.7	48.6	66.2	66.0	54.4	€10.60
Romania	-	69.4*	7.8*	6.4*	56.3*	63.0*		28.8	€2.33
Slovakia	$16,175	71.5	15.5	17.3	68.1	59.2	55.5	57.5	€4.80
Slovenia	$23,456	70.2*	6.2	7.1	49.2	58.5*		62.8	€10.76
Spain	$27,377	68.8	7.1	12.2	32.6	61.2	63.6	89.9	€15.22
Sweden	$32,298	65.3	7.3	7.3	18.9	65.4	62.5	101.6	€31.55
Switzerland	$35,839	68.0	3.9	5.1	39.0	65.3	64.9	92.3	€32.82
Turkey	$10,841	65.7	10.2	10.1	39.6	64.5	63.8	-	-
UK	$32,695	66.0	5.2	4.3	22.4	63.2	61.4	91.9	€24.47
OECD	$26,849	-	8.3	9.6	45.9	-	-	-	-
EU-27*	-	67.0	-	-	-	-	-	88.3	€20.47

*Sources: GDP per capita in PPP; Unemployment rate; Long-term unemployment rate: OECD, 2009b; *Eurostat, 2009; Working age population: OECD, 2009a; Average age of withdrawal, 2000-2005: OECD, 2009d, *Eurostat, 2009; Labour productivity per hour worked, GDP in PPS: Eurostat, 2009b; Hourly labour costs: Eurostat, 2009a*

	Public social expenditure (% GDP)	Public expenditure on health (% GDP)	% spent of benefits spent on*:			Generosity of the welfare system	Social protection system interventions
			Sickness/Health care	Disability	Unemployment		
Austria	27.2	7.9	25.5	8.6	5.8	5.46	2
Belgium	26.4	7.4	27.1	7.0	12.2	4.38	2
Canada	16.5	6.9	-	-	-	3.52	-
Croatia	-	-	-	-	-	-	-
Czech Republic	19.5	6.3	35.3	7.8	3.6	5.15	2
Denmark	26.9	7.9	20.7	14.4	8.6	5.40	2
Finland	26.1	6.2	25.9	12.9	9.3	2.60	3
France	29.2	8.9	29.8	5.9	7.5	5.24	3
Germany	26.7	8.2	28.4	6.2	7.0	6.11	2
Greece	20.5	5.6	27.8	4.9	5.1	-	1
Ireland	16.7	6.5	40.9	5.3	7.5	-	3
Israel	-	-	-	-	-	-	-
Italy	25.0	6.8	26.7	6.0	2.0	-	2
Lithuania	-	-	30.3	10.4	1.8	-	2
Netherlands	20.9	6.0	30.7	9.7	6.1	3.40	3
Norway	21.6	7.6	32.0	19.1	2.7	-	3
Portugal	-	7.3	30.1	10.0	5.8	4.75	1
Romania	-	-	36.2	6.8	3.2	-	-
Slovakia	16.6	5.3	29.6	8.1	3.4	5.00	2
Slovenia	-	6.1	32.3	8.5	3.3	-	2
Spain	21.2	5.8	30.9	7.5	12.3	4.75	2
Sweden	29.4	7.5	25.9	15.0	6.1	6.73	2
Switzerland	20.3	6.8	26.4	12.7	4.4	5.09	2
Turkey	13.7	4.1	-	-	-	-	-
UK	21.3	7.1	30.9	8.9	2.6	3.87	3
OECD	20.5	6.5	-	-	-	-	-
EU-27	-	-	28.8	7.6	6.0	-	-

Sources: Public social expenditure; Public expenditure on health: OECD, 2009d; % spent on disability benefits: Eurostat, 2009c; Generosity of the Welfare System: Osterkamp and Rohn, 2007 (higher score = more generous); Social protection system intervention ratings (1 = limited interventions to 3 = advanced interventions available)

	Sickness absence due to health reasons (%)	Average days absent'	DALYs MSDs (% of Total)		DALYs RA (% of Total)	Prevalence work-related backache (Working population)	Number of RA Patients (General (Prevalence)	Physicians per 1,000 population	
			Male	Female				Rheumatologists*	GPs
Austria	20.6	3.4	3.3	5.4	0.86	23.9	55,000 (0.67)	0.024	1.47
Belgium	28.8	7.0	3.1	5.1	0.78	19.4	69,000 (0.66)	-	2.08
Canada	-	-	-	-	0.86	-	215,000 (0.66)	0.014	1.03
Croatia	19.3	9.4	2.3	4.5	-	41.7	-	-	-
Czech Republic	28.2	5.5	-	-	0.69	22.8	68,000 (0.66)	0.014	0.73
Denmark	32.8	6.6	3.1	4.7	0.78	18.8	36,000 (0.66)	-	0.77
Finland	44.6	8.5	3.1	5.5	0.88	26.1	35,000 (0.67)	0.020	0.72
France	19.1	5.5	3.1	5.4	0.81	21.6	283,000 (0.45)	0.036	1.66
Germany	28.0	3.5	3.3	5.5	0.83	18.8	544,000 (0.66)	0.015	1.46
Greece	14.0	2.8	3.1	5.5	0.78	47.0	50,000 (0.45)	0.025	0.29
Ireland	21.1	3.9	2.7	4.6	0.77	14.4	28,000 (0.67)	0.011	0.51
Israel	-	-			-	-		0.014	-
Italy	25.1	3.8	3.5	6.0	0.91	24.3	264,000 (0.45)	0.029	0.94
Lithuania	21.1	4.3	2.8	6.6	0.79	37.8	22,000 (0.65)	0.024	-
Netherlands	33.7	8.6	3.6	5.2	0.87	13.9	108,000 (0.66)	0.014	0.46
Norway	27.2	7.1	3.5	5.3	0.89	22.6	31,000 (0.67)	0.044	0.81
Portugal	13.4	8.6	2.5	5.1	0.72	30.8	70,000 (0.66)	0.009	1.68
Romania	11.1	2.0	3.2	5.9	0.76	42.4	143,000 (0.66)	0.013	-
Slovakia	22.9	5.2	3.6	7.3	0.93	38.9	36,000 (0.67)	0.017	-
Slovenia	28.2	8.7	2.7	4.9	0.72	46.2	13,000 (0.65)	0.012	-
Spain	14.2	3.6	3.1	6.0	0.83	29.1	197,000 (0.45)	0.018	0.85
Sweden	28.1	-	3.9	5.9	0.97	27.9	60,000 (0.66)	0.029	0.59
Switzerland	19.2	4.0	3.9	6.2	0.96	18.1	49,000 (0.66)	0.055	0.52
Turkey	18.6	4.8	-	-	0.84	34.7	482,000 (0.66)	0.002	0.74
UK	22.6	3.7	3.2	4.9	0.81	10.8	399,000 (0.66)	0.015	0.71
EU-27	22.3	4.6	3.2	5.5	-	25.6	-	-	-
Europe	-	-	-	-	0.84	-	2,962,000	-	-

Sources: Sickness absence due to health reasons; prevalence work-related backache: EWCS 2005; Parent-Thirion et al., 2007 DALYs MSDs: WHO 2006, 2007; DALYs RA, Prevalence RA: Lundkvist et al. 2008; Rheumatologists per 1,000 population: various sources and years; GPs per 1,000: OECD, 2009c*

Variable	Definition – Provided by source	Source
Labour indicators		
GDP per capita in PPP 2005	Gross domestic product is an aggregate measure of production equal to the sum of the gross value added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs). The sum of the final uses of goods and services (all uses except intermediate consumption) measured in purchasers' prices, less the value of imports of goods and services, or the sum of primary incomes distributed by resident producer units.	OECD, 2009b; Data starred (*) in the table come from Eurostat, 2009
Working age population, % 2005	Share of total population between the ages of 15 and 64, inclusive.	OECD, 2009a
Unemployment rate by gender 2005	Unemployed persons are defined as those who report that they are without work, that they are available for work and that they have taken active steps to find work in the last four weeks. The ILO Guidelines specify what actions count as active steps to find work and these include answering vacancy notices, visiting factories, construction sites and other places of work, and placing advertisements in the press as well as registering with labour offices. The unemployment rate is defined as the number of unemployed persons as a percentage of the labour force, where the latter consists of the unemployed plus those in employment, which are defined as persons who have worked for one hour or more in the last week.	OECD, 2009b
Long-term unemployment – Annual averages by gender (%) 2005	Long-term unemployment is conventionally defined either as those unemployed for six months or more or, as here, those unemployed for 12 months or more. The ratios calculated here show the proportion of these long-term unemployed among all unemployed.	OECD, 2009b

Variable	Definition – Provided by Source	Source
Labour indicators, continued		
Average age of withdrawal from the labour market – retirement 2005	Retirement is associated with cessation of work and receipt of a pension. Actual retirement ages are difficult to measure directly without internationally comparable longitudinal data, so international comparisons must rely on indirect measures from cross-sectional data. Indirect measures regard persons above a specified age as ‘retired’ if they are not in the labour force at the time of the survey (average age at labour force exit). Net movements into retirement are proxied by the changes over time in the proportion of the older population not in the labour force. This indirect measure is used in ongoing OECD reviews of older workers. It measures the average effective age of retirement. The official age of retirement is also complex to pin down, especially when retirement is based on fixed years of pension contribution.	OECD, 2009d; Data starred (*) in the table come from Eurostat, 2009
Labour productivity per hour worked – GDP in PPS	Gross domestic product (GDP) is a measure for the economic activity in an economy. It is defined as the value of all goods and services produced less the value of any goods or services used in their creation. GDP per hour worked is intended to give a picture of the productivity of national economies expressed in relation to the European Union (EU-15) average. If the index of a country is higher than 100, this country level of GDP per hour worked is higher than the EU average and vice versa. Basic figures are expressed in PPS, ie a common currency that eliminates the differences in price levels between countries allowing meaningful volume comparisons of GDP between countries. Expressing productivity per hour worked will eliminate differences in the full-time/part-time composition of the workforce.	Eurostat, 2009b
Hourly labour costs 2005	Average hourly labour costs, defined as total labour costs divided by the corresponding number of hours worked.	Eurostat, 2009a

Variable	Definition – Provided by Source	Source
Welfare indicators		
Public social expenditure (% of GDP) 2005	Social expenditure is classified as public when general government (ie central administration, local governments and social security institutions) controls the financial flows.	OECD, 2009d
Public expenditure on health care 2005	Public expenditure on health refers to expenditure on health care incurred by public funds. Public funds are state, regional and local government bodies and social security schemes. Public capital formation on health includes publicly financed investment in health facilities plus capital transfers to the private sector for hospital construction and equipment. Public funds correspond to HF.1 in the ICHA-HF classification of health care financing.	OECD, 2009d
Sickness/healthcare benefits – % of total benefits 2005	Expenditure on social protection contain: social benefits, which consist of transfers, in cash or in kind, to households and individuals to relieve them of the burden of a defined set of risks or needs; administration costs, which represent the costs charged to the scheme for its management and administration; other expenditure, which consists of miscellaneous expenditure by social protection schemes (payment of property income and other).	Eurostat, 2009c
Disability – Social benefits by function – % of total benefits 2005	Same as above.	Eurostat, 2009c
Unemployment – Social benefits by function – % of total benefits 2005	Same as above.	Eurostat, 2009c

Variable	Definition – Provided by Source	Source
Welfare indicators continued		
O&R generosity index	Seven different measures of generosity were combined to construct a single measure of generosity that ranges from between zero and seven, where seven indicates the highest level of generosity. The seven variables include waiting period, self-certification, total maximum duration of payment, employer maximum duration of payment, employer amount of payment, sickness fund amount of payment and external proof.	Osterkamp, and Rohn, 2007
Social protection system interventions	The Mutual Information System on Social Protection (MISSOC) database provides a description of the social protection systems for each European country and allows for comparison between systems. Three independent reviewers reviewed the summary descriptions of the social protection topics geared toward benefits for invalidity and employment injuries and occupational diseases. The systems were scored from one to three with one meaning very limited regulations in place that could contribute to early intervention and three meaning advanced regulations in place that could contribute to early intervention.	Ratings by independent reviewers. Data from MISSOC (2009). Comparative tables on social protection – January 2005. Retrieved 27 July 2009 from http://ec.europa.eu/employment_social/missoc/db/public/compareTables.do?lang=en

Variable	Definition – Provided by Source	Source
Health outcomes		
Average days absent due to health reasons	The median number of days absent because of health.	Parent-Thirion, Fernández Macías, Hurley and Vermeylen, 2007
% sickness absence due to health reasons 2005	% reporting absence caused by ill-health.	EWCS, 2005
DALYs – MSDs, male and female	Disability adjusted life years (DALYs) are frequently used to assess the burden of disease. The WHO's definition of DALY – 'combines in one measure the time lived with disability and the time lost owing to premature mortality. One DALY can be thought of as one lost year of healthy life.'	WHO, 2006, 2007)
DALYs – RA	DALYs are frequently used to assess the burden of disease. The WHO's definition of DALY – 'combines in one measure the time lived with disability and the time lost owing to premature mortality. One DALY can be thought of as one lost year of healthy life.'	Lundkvist, Kastäng and Kobelt, 2008
Prevalence – Backache 2005	% reporting work-related backache in the EWCS.	EWCS, 2005
Number of people with RA	Estimated number of people with RA. The percentage is calculated from the number of people with RA divided by the population numbers listed in the article.	Lundkvist, Kastäng and Kobelt, 2008
Practicing rheumatologists, density per 1,000 population	Number of practising rheumatologists per 1,000 population. The definition that was used to derive the ratio for rheumatologists may differ by country depending on the source, which makes comparability difficult.	Various sources
Practicing general practitioners (GPs), density per 1,000 population 2005	Number of practicing GPs per 1,000 population.	OECD, 2009c

Eurostat. (2009a). Hourly labour costs – EUR. Retrieved on 4 June 2009 from http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00173&plugin=1

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Appendix D: Executive summaries from Fit for Work country reports

Austria

Economic growth and employment rates have both been high in Austria compared with other European countries. However, the global economic crisis is slowing down growth – resulting in rising unemployment figures.

Along with other European countries the Austrian workforce is ageing and with that the need to keep talented and skilled employees in Austria remains a priority. In order to address the gap between the needs of employers and the skills of employees some have called for improvements in workforce participation among older age groups. Austria has one of the lowest participation rates of older workers, but some new initiatives have started to focus on improving this.

However, in order to ensure older workers can continue working and contributing to the Austrian economy, their health, along with the health of the rest of the workforce, is an important concern. Musculoskeletal disorders (MSDs) are the most commonly reported cause of work-related ill-health in Austria.

- One estimate suggests that Austria could save 2.6 per cent of its gross domestic product by reducing sickness absence among employees.
- Over 7.7 million work days were lost to MSDs, which is the highest of all disease groups, and 40 per cent of lost time was attributable to MSDs. Additionally, MSDs are frequently reported as a cause for disability pensions and premature retirement.
- Back problems are frequently reported as serious work-related health problems among Austrians. About 24 per cent of Austrian workers report experiencing back pain each year due to work.
- Over 20 per cent of Austrian workers report muscular pain in their neck, shoulders and upper limb disorders. Work-related upper limb disorders (WRULDs) can affect the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness and tingling sensations in the affected area.
- 55,000 people in Austria have rheumatoid arthritis (RA). Of people with RA, 67 per cent report that it affects their job performance. The total costs of RA are estimated to be just below €16,000 per patient per year.
- It is estimated that 8,300–16,000 people in Austria have ankylosing spondylitis (AS).

Belgium

The global economic downturn is beginning to have an impact in Belgium and the consequences for the Belgian labour market are becoming more serious.

The health of Belgian workers remains an important concern. When the up-turn comes, almost one in five of the workforce will not be healthy enough to drive improvements in productivity, which Belgium needs to compete in an increasingly globalised, knowledge-based economy.

Of all the causes of work-related ill-health ‘stress’ grabs the headlines because it accounts for almost 20 per cent of all working days lost each year in Belgium. Whilst the number of working days lost to stress may be high, at least twice the number of working days are lost through MSDs. Indeed, MSDs are, by some margin, the most commonly reported cause of work-related ill-health in Belgium. The direct cost and indirect costs of absence from work in Belgium is estimated to be at least €10.3billion.

- In 2008, the cost of sickness absence in Belgium was €10.35billion. On average the indirect costs of absence were 2.5 times higher than direct costs.
- Just under one in five Belgian workers report experiencing back pain each year. Up to 65 per cent of the adult population report significant back pain at some time in their life. Back pain accounts for 29 per cent of all working days lost through sickness absence, which equates to 5.7 million lost days. For long-term absence, back pain accounts for almost 12 per cent of sick leave lasting 28 days or more. The total cost of back pain to Belgian society has been put as high as €1.6billion.
- Over 17 per cent of Belgian workers have muscular pain in their neck, shoulders and upper limbs.
- At least 69,000 people in Belgium have rheumatoid arthritis (RA). The total cost of RA to Belgian society has been estimated at €1.21billion.
- Around 7,600 people in Belgium have AS and the average annual human capital costs are about €3,600 per AS patient.

Canada

The health of Canadian workers has been a serious issue for a number of years. With the economic downturn and rise of unemployment, addressing workforce health issues could reduce sickness absence, as well as improve productivity. The health of the workforce plays an important role in driving improved productivity, which Canada needs to compete in an increasingly globalised, knowledge-based economy, particularly when the up-turn comes.

MSDs such as back pain, arm or neck strains or diseases of the joints are a considerable cost to Canadian society with estimates suggesting upwards of C$20billion. While many in Canada understand the impact MSDs have on individuals, families, businesses and society, increased awareness, as well as actions to increase prevention and early intervention, could greatly reduce the burden of MSDs to Canada.

- One in eight Canadians reported having a chronic back problem and most Canadians report back pain at some point in their lifetime. Even with the high impact on the population, public beliefs about back pain differ from the scientific evidence available. In particular, Canadians think that resting until their pain is relieved is appropriate treatment. However, staying active often facilitates recovery.
- One in 10 Canadians are limited in their normal activities due to a repetitive strain injury (RSI), another term for WRULD, and the highest prevalence of RSIs is among the 30 to 49 age group.
- Arthritis and other rheumatic conditions affect almost 4 million Canadians and three out of five people with arthritis are younger than 65 years of age.

- About 215,000 people in Canada have RA. Arthritis-associated lost productivity amounted to an average of C$11,553 per person per year with over 40 per cent of this loss resulting from reduced performance while at work. Decreased hours of work and absenteeism accounted for just 12 per cent and 10 per cent respectively of lost productivity. In total the costs associated with RA in particular were C$12,352 per worker per year.
- The Arthritis Society estimates that between 150,000 and 300,000 Canadians have AS. The mean annual cost of AS per patient is just over C$9,000.

Croatia

Thanks to a process of economic transformation and the EU accession negotiations, Croatia has recently undergone a period a solid growth and is roughly on a par with the average growth for European transition countries. However, the unemployment rate is still very high, and corruption and a lack of qualified personnel remain critical points for improving governance in Croatia.

Furthermore, the health of Croatian workers is also giving serious cause for concern. In 2008, more than 18 million working days were lost due to sickness absence. Apart from a high percentage of people who are overweight or obese, cardiovascular, respiratory and musculoskeletal disorders (MSDs) are the most common diseases among the Croatian population.

Bearing in mind that a limited body of evidence is available in Croatia, it seems that:

- Back pain is a very common complaint. In 2008 it was the cause of disability for 31,741 people.
- About 37 per cent of Croatian workers report that they have experienced muscular pain in their neck, shoulders and upper limbs.
- In 2008 RA was the cause of disability for 3,009 people, of whom 77 per cent were women and 23 per cent were men. RA accounts for 0.83 and 0.84 of all DALYs lost in Western and Eastern Europe respectively.
- In 2008 there were 7,680 people whose cause of disability were SpAs. A similar distribution across both sexes was found.

Czech Republic

The economic downturn is starting to hit the Czech Republic hard. The consequences for the Czech labour market is likely to be especially difficult, partly because of the speed with which unemployment has risen, with all its individual, social and economic ramifications. The health of Czech workers is also giving serious cause for concern. A significant proportion of the workforce is not healthy enough to drive the improvements in productivity, which the Czech Republic needs to compete in an increasingly globalised, knowledge-based economy when the up-turn comes. There is also overwhelming evidence that worklessness is bad for health and that job retention and rehabilitation back into work can positively affect physical health, psychological well-being and raise people out of poverty.

More than 51 working days per patient were lost in 2007 through musculoskeletal disorders (MSDs) such as back pain, arm or neck strains or diseases of the joints. Indeed, MSDs are, by some margin, among the most commonly reported causes of work-related ill-health in the Czech Republic.

Evidence suggests that:

- 39 per cent of Czech workers experience work-related back pain;
- 38 per cent of Czech workers experience muscular pain in their neck, shoulders and upper limbs;
- Rheumatoid arthritis is prevalent in 610 per 100,000 adults;
- Ankylosing spondylitis is prevalent in 118.9 per 100,000 adults.

Denmark

The global economic downturn is beginning to have an impact in Denmark. The consequences for the Danish labour market are becoming more serious. The health of Danish workers also gives cause for concern. Whilst stress accounts for 24 per cent of all working days lost each year in Denmark and is a current priority for policymakers, one fact seems to have become obscured amid the understandable concern about stress and the psychological well-being of the Danish workforce: the number of working days lost to stress might be high, but at least the same number of working days are lost through MSDs such as back pain, arm or neck strains, or diseases of the joints. In fact, MSDs are the most commonly reported cause of work-related ill-health in Denmark. The direct cost of MSDs at work in Denmark is estimated to be at least DKK25billion.

- Just under half of the Danish population experiences back pain each year and about 20 per cent of Danish workers report work-related back pain. Up to 65 per cent of the adult population will experience significant back pain at some time in their life.
- Around 30 per cent of Danish workers suffer from muscular pain in their neck, shoulders and upper limbs. Research finds that low job satisfaction predicted both neck and shoulder pain among Danish workers.
- The Danish Rheumatology Patients Organisation reports that 700,000 people in Denmark are affected by arthritic conditions and that 43 per cent of all long-term sickness in the Danish workforce is caused by rheumatic disease.
- At least 36,000 people in Denmark have RA. It accounts for 13 per cent of GP consultations. The total annual cost of RA to Danish society has been estimated at €619million.
- Around 10,000 people in Denmark have AS, but it can take up to 7 years to diagnose accurately after the onset of the condition.

Finland

The economic downturn is having a significant impact on Finland. The consequences for the Finnish labour market have been especially difficult, partly because of the speed with which unemployment has risen, with all its individual, social and economic ramifications.

The health of Finnish workers is also giving serious cause for concern. At least a third of the workforce is not healthy enough to drive the improvements in productivity, which Finland needs to compete in an increasingly globalised, knowledge-based economy when the up-turn comes. There is also overwhelming evidence that worklessness is, itself, bad for health, and that job retention and rehabilitation back into work can positively affect physical health, psychological well-being and raise people out of poverty.

The number of working days lost to ‘stress’ might be high, but more than 30 per cent of working days are lost through musculoskeletal disorders (MSDs) such as back pain, arm or neck strains, or diseases of the joints. Indeed, MSDs are, by some margin, the most commonly reported cause of work-related ill-health in Finland. The annual direct cost of work-related MSDs in Finland is estimated to be at least €222million.

Evidence suggests that:

- Over 40 per cent of Finnish workers suffer from recurrent neck and shoulder pain. In addition, workers reporting recurrent aches and pains in their hands and arms have almost twice as many sickness days as those workers without such pain (13.2 days compared with 6.9 days). A similar pattern exists with workers reporting recurrent pain in the neck, spine and shoulders (10.5 days to 6.8 days).
- Between 1990 and 2003 the proportion of workers reporting recurrent pain in their neck and shoulders increased steeply (from 40 per cent to 48 per cent) for those who used computer-based equipment for almost all of their working time.
- Just under 30 per cent of Finnish workers report back pain attributable to work. Some estimates put the direct and indirect costs of back pain in Finland at 0.8 per cent of GDP.
- Some 35,000 people in Finland have rheumatoid arthritis (RA). Early RA can result in a substantial loss in productivity. A 5-year study found that in Finland lost productivity per patient-year averaged €7,217 (€6,477 for women and €8,443 for men).

France

The economic downturn is hitting France hard and the health of French workers is an important policy concern. A high percentage of the workforce is not healthy enough to drive the improvements in productivity that France needs to compete. Of all the causes of work-related ill-health, in 2007 more than 34,000 cases of MSDs were compensated by the Caisse Nationale d'Assurance Maladie des Travailleurs Salariés. In the same year, more than 7 million days of work were lost through MSDs, causing a cost to society of more than €736million. By the same token, chronic musculoskeletal conditions such as RA and spondyloarthropathies (SpAs) affect 2.6 per cent of patients with a long-term disease.

- About 22 per cent of French workers report work-related back pain; in general women experience back pain more often and severely than men. Back pain has a strong impact on individuals' working lives in terms of early retirement and sick leave.
- Nearly a fifth of French workers experience muscular pain in their neck, shoulders and upper limbs. WRULDs are the first cause of occupational illness in France, and their prevalence increases with the increasing age of the workforce and among blue collar workers.
- Prevalence of RA among the French population has been estimated to vary between 0.31 and 0.62 per cent. More than a third of patients experience RA in its severe form. This causes an increased use of health care resources and early retirement in 34 per cent of cases thus increasing the burden of RA to individuals, their families and society. The cost to society increases as disease severity increases with an estimated cost of €9,400 for mild disease and €40,700 for severe disease.
- Prevalence of SpAs in France is reported to be 0.30 per cent. The employment rate among French people with AS is 72 per cent and AS accounts for 6 days of absence leave on average.
- The total cost of work-related MSDs was estimated to be between €6,800 and €11,200 per person affected each year.

Germany

The economic downturn has been difficult for Germany. Many recognise that the health of German workers is also a cause for concern. MSDs, in particular, have a significant impact on people's ability to work; both on an aggregate and an individual basis. Together, they affect the productivity and labour market participation of a good portion of German workers. Evidence suggests that:

- MSDs are a major contributor to occupational disorders in the Germany. Data from the health insurance organisations suggest that MSDs are the cause of 30 per cent of all days of absence.
- Back pain prevalence rates have remained stable in Germany. Data from the European Working Conditions Survey suggest that around 19 per cent of workers in Germany report work-related back pain. Other data provide higher 1-year prevalence rates where between 60 and 74 per cent report back pain. Germans who work in roles where they carry heavy loads or maintain a single working posture have increased rates of back pain. For the vast majority of patients with back pain no specific diagnosis is given.
- About 15 per cent of German workers report muscular pain in their neck, shoulders and upper limb disorders. WRULDs can affect the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness and tingling sensations in the affected area.

- The prevalence of inflammatory arthritis is 3.4 per cent and 544,000 people in Germany have RA. The total costs of RA are estimated to be about €12,219 million per year. For AS, the prevalence is about 0.55 per cent.

The German Fit for Work report is due for publication in January 2010. The executive summary for Germany just provides some of the data that will likely be presented in the report.

Greece

The economic downturn is starting to affect Greece. Whilst economic conditions had improved in recent years, Greece's economy has not performed as strongly as other European countries, even though Greek workers work some of the longest hours compared with their European counterparts. Long hours, combined with low job satisfaction, have implications for the health of the Greek workforce. Many of Greece's workers report that their health is affected by their work. This may mean that the workforce is not healthy enough to drive the improvements in productivity that Greece needs to compete when the up-turn comes. MSDs affect a large proportion of the Greek population and likely contribute to the overall health of the Greek workforce.

- A large proportion of the Greek population report having an MSD including low back pain, neck pain, WRULDs and inflammatory rheumatic conditions and one out of five visits to the physician were related to MSDs.
- Back problems are frequently reported as serious work-related health problems among Greek workers. About 47 per cent of Greek workers report experiencing back pain each year due to work. This is the highest within Europe. In the general population, of the almost 32 per cent who reported low back pain in the previous month, just over 19 per cent reported work absenteeism that on average lasted about 4.5 days.
- About 46 per cent of Greek workers report muscular pain in their neck, shoulders and upper limb disorders. Again, this is the highest within Europe.
- Prevalence estimates suggest that between 32,000 and 75,000 people in Greece have RA. Patients with early RA experience psychological distress, particularly during times of exacerbation, which may affect their ability to carry out their daily activities.
- Spondyloarthropathies (SpAs) are a family of inflammatory conditions that affect the joints, tendons and ligaments. Estimates based on prevalence data suggest that about 44,000 people in Greece have AS and psoriatic arthritis (PsA) – two specific SpAs.

Ireland

The consequences of the economic downturn for the Irish labour market have been especially difficult, partly because of the speed with which unemployment has risen with all its individual, social and economic ramifications. The health of Irish workers is also giving serious cause for concern. At least one in 10 of the workforce is not healthy enough to drive the improvements in productivity that Ireland needs to compete in an increasingly globalised, knowledge-based economy when the up-turn comes. By some margin, MSDs are the most commonly reported cause of work-related ill-health in Ireland. The direct cost of MSDs at work in Ireland is estimated to be at least €750million.

- The estimated total annual cost of work-related accidents and ill-health is likely to be close to €3.6billion. About €1.8billion was accounted for by lost output caused by temporary and permanent absence from work.
- Chronic musculoskeletal pain remains undiagnosed in 42 per cent of adult cases. Despite this 67 per cent reported that pain caused a significant reduction in their quality of life, 49 per cent were limited in the kind of work they were able to perform and 25 per cent of adults with chronic musculoskeletal pain had never seen a doctor about their pain.
- Over 14 per cent of Irish workers report experiencing back pain each year and over a quarter of non-fatal injuries in Irish workplaces are attributable to back pain.
- Just under 14 per cent of Irish workers suffer from muscular pain in their neck, shoulders and upper limbs.
- Almost 40,000 people in Ireland have RA with 30 per cent of all GP visits each year being attributable to it. Arthritis Ireland estimates that the annual cost of lost productive time due to RA and other forms of arthritis is €1.6billion.
- Over 44,000 people in Ireland have AS. Reported unemployment rates are three times higher among people with ankylosing spondylitis than in the general population. It is a condition most often diagnosed among men in their early twenties.

Israel

The economic downturn is underway in Israel. The consequences for the Israeli labour market have been especially difficult, partly because of the speed with which unemployment has risen with all its individual, social and economic ramifications. The health of Israeli workers is also giving serious cause for concern. It is likely that a significant proportion of the Israeli workforce is not healthy enough to drive the improvements in productivity needed to compete in an increasingly globalised, knowledge-based economy when the up-turn comes. There is also overwhelming evidence that worklessness is, itself, bad for health and that job retention and rehabilitation back into work can positively affect physical health, psychological well-being and raise people out of poverty.

In Israel, there are some 700,000 cases of musculoskeletal disorders (MSDs) such as back pain, arm or neck strains or diseases of the joints. Indeed, MSDs ranked ninth among the top 10 conditions affecting males and fourth among the top 10 conditions affecting females when comparing disability-adjusted life years (WHO 2004).
MSDs have a significant impact on people’s ability to work. Studies have revealed that:

- 17.9 per cent of those aged 21 and over reported having chronic back or neck pain.
- In Tel Aviv 15.6 per cent of individuals aged 25 years and above experienced rheumatic symptoms for at least 6 continuous weeks in a year; 29.5 per cent experienced at least a week of symptoms, while every second person aged 65 or over experienced a rheumatic complaint for at least a week.

Italy

The Italian public debt ratio is the second highest among OECD countries and the employment rate is one of the lowest in the EU27. This leaves the Italian government little choice but to resume fiscal consolidation. Apart from increasing surveillance on tax evasion and fiscal pressure in the energy, banking and insurance sectors, the government is planning to reduce public expenditure, mainly using fiscal federalism, with cuts in public employment, health care and social security to a lesser extent.

However, the health of Italian workers remains an important factor for economic productivity. Recent figures show that a high percentage of Italians has one or more chronic disease (osteoarthritis and arthritis are the most frequent) and that chronic conditions account for 70 per cent of total public health expenditure. In addition, work-related MSDs represented more than 41 per cent of all occupational diseases reported to INAIL (National Insurance for the Insurance of Accident at Work) in 2007, and musculoskeletal pain is the most frequent origin of pain among the Italian population.

- 24.3 per cent of Italian workers experience back pain each year – those working in the construction and health care sectors are most affected. In Italy, 13.8 per cent of GP consultations are the result of back pain and in 42 per cent of cases consultation due to pain ends with an uncertain diagnosis.
- About 22 per cent of Italian workers experience muscular pain in their neck, shoulders and/or upper/lower limbs. Workers aged between 30 and 49 years are the most affected, and as they get older, female workers report more work-related muscular pain than men.
- Approximately 300,000 people have RA. RA has a strong impact on people's working lives and estimates show that about 23 per cent of people diagnosed with RA have retired or modified their job due to their condition. The total cost of RA per patient per year has been estimated to vary between €3,718 and €23,000 according to the severity of the condition (the more severe the condition the higher the costs). The loss of productivity represents the major cost of the disease, which is already at intermediate severity. Early diagnosis and intervention are fundamental to reduce the personal, social and economic cost of RA. However, in Italy the time elapsed from onset to early diagnosis is still too long (over 1.5 years).
- Over 600,000 people in Italy have SpAs. Of those, over 144,000 are in paid employment. However, due to their condition they are on average absent from work for 70 days a year. Total costs for SpAs have been estimated to be equal to about €8,000 per patient per year.
- More than 23 million days of work are lost every year due to RA and SpAs. The burden of MSDs goes beyond the lives of people with these conditions. As 27 per cent of Italian workers are also providers of informal care for an elderly or disabled person in their family, the costs of MSDs to Italian society should also include the possibility of carers developing an MSD themselves and the loss of productivity caused by looking after a family member full- or part-time.

Netherlands

A healthy Dutch workforce will help drive improvements in productivity, which the Netherlands needs to compete in an increasingly globalised, knowledge-based economy when the up-turn comes.

In recent years, the Netherlands has made good progress in reforming its social protection system. Reforms have focused on sickness benefits by giving the responsibility to employers for paying sickness benefits for the first 2 years. Employees also play a role along with occupational health physicians. In addition to reforms, a number of trial interventions have been researched and studied, and more research continues to ensure that individuals are provided with the support they need to return to work.

Keeping people attached to the workforce will positively influence Dutch society. However, with all the reforms and interventions, a number of strands still need to come together in order to ensure workers not only return to work quickly, but also receive the health care that they need to get better. The stakeholders in the Netherlands need not only to focus on solely reducing absence, but also consider the support and adjustments workers with MSDs need to remain productive whilst at work.

- MSDs are a major contributor to occupational disorders in the Netherlands. In 2007 over 39 per cent of occupational disorders were classified as a disease of the musculoskeletal system and connective tissue – the number one reported disease group. Of workers on sick leave for more than 13 weeks, 19 per cent reported back disorders and 13 per cent reported neck, shoulder and arm problems.
- Reports of back pain among workers range between 14 per cent to around 45 per cent. In the vast majority of patients with back pain no specific diagnosis is given. Recovery often occurs within 3–4 weeks, but people with chronic low back pain report worse general well-being. Low back pain ranks among the top five most common reasons for consulting GPs in the Netherlands. However, one study suggests that the indirect costs of low back pain comprise 84 per cent of the total costs. The annual cost of low back pain and neck pain in the Netherlands is about €7.6billion. The loss of productivity due to low back pain and neck pain are suggested to be nine times the health care costs.
- 15.5 per cent of Dutch workers report muscular pain in their neck, shoulders and upper limb disorders. WRULDs can affect the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness and tingling sensations in the affected area. Repetitive strain injuries (RSIs) are reported by 30 per cent of female workers and 23 per cent of male workers. These are often associated with working in uncomfortable positions, body vibrations, working in the same position and repetitive movements. Individuals with symptoms of muscular pain in their neck, shoulders or upper limbs have lower levels of productivity, which mainly results from reduced performance at work and reduced working hours. Individuals on sick leave with RSIs reported worse mental health, reduced functional ability and reduced work ability. Their quality of life is often worse too. RSIs are estimated to cost the Netherlands about €2.1billion with the majority of costs occurring due to absence and lost productivity.

- The prevalence of chronic arthritis in the Netherlands is also high at about 4 per cent of the general population. For individuals with early inflammatory conditions about 26 per cent report absence from work lasting 2 weeks or longer within the past 6 months. Pain, functional limitations and job design are all related to sick leave.
- 108,000 people in the Netherlands have RA. The prevalence rate is reported to be 0.9 per cent with an incidence rate of 0.02 to 0.03 per cent. The average age of diagnosis is 37. Over 30 per cent of individuals with RA become partially work disabled within a year and within 5 years about 45 per cent become partially work disabled. Employment rates are also lower for individuals with RA. The total costs of RA are estimated to be just fewer than €12,600 per patient per year or €1.4billion total per year. Higher costs are generally associated with worse general well-being, worse quality of life, higher functional disability and younger age. The direct costs of RA are estimated to be about €5,000 per patient per year.
- AS is a progressive and chronic rheumatic disorder that mainly affects the spine, but can also affect other joints, tendons and ligaments. The average age of diagnosis in the Netherlands is around 31. It is estimated that 11,700 people in the Netherlands have AS. Reported unemployment rates are three times higher among people with AS than in the general population. Individuals with AS on work disability often have a low quality of life as well. The average annual cost of AS in the Netherlands is €38million.

Norway

The global economic downturn has started to affect the normally solid Norwegian economy. Although Norway has a GDP that is 54 per cent above the EU average, the healthiest public balance and one of the highest percentages of people in paid employment, the latest figures show that the unemployment rate has increased and that with the fall of GDP in the OECD area and the significant decline in oil and gas prices, the economy will not see an upward swing until 2011. As in Norway spending on disability and sickness absence as percentage of GDP is more than twice the OECD average, and recent figures show an increasing trend, the imperative to maximise labour productivity and to ensure that the workforce is equipped to take full advantage of an up-turn in the economy has intensified still further.

- Of all the causes of disability and sickness absence in Norway MSDs account for about a third of them. In 2008 about 9 per cent of workers reported sickness absence and the majority of doctor-certified sickness absence lasted about a week.
- MSDs are the most common cause of chronic illness among Norwegians followed respectively by diseases of the respiratory system and cardiovascular diseases. About 34 per cent of those reporting a musculoskeletal condition are economically inactive.
- About 23 per cent of Norwegian workers report work-related back pain. Back pain accounts for 13 per cent of all sickness leave lasting more than 8 weeks. The lifetime prevalence of low back pain is about 61 per cent and the 1-year prevalence is 41 per cent. For the majority, back pain will disappear on its own within 4– 6 weeks.

- About 31 per cent of Norwegian workers report work-related muscular pain in their neck, shoulders and/or upper/lower limbs. WRULDs are more frequently experienced by women aged between 30 and 49 years; people over 30 years are more likely to present WRULDs compared to younger ones.
- The prevalence of RA in Oslo is estimated to be about 0.44 per cent. One recent estimate suggests that in Norway there are about 31,000 people with RA. About 40 per cent of them receive a work disability pension. The total cost of RA to Norwegian society has been estimated to be NOK6.2billion or €705million.
- Back pain and rheumatoid arthritis (RA) cost Norwegian society about NOK21billion or €2.4billion.

Portugal

After a period of stalled growth, Portugal's economy started to improve in 2005. Now with the world economic crisis, the downturn is expected to reverse some of the progress made in terms of improved productivity and workforce participation. Portugal must prepare its workforce for when the economy begins to improve again. Along with education and qualifications, a key driver of labour productivity is workforce health and well-being.

When workers in Portugal go on sick leave, they are more likely to be absent for longer periods of time compared with their counterparts in other European countries. MSDs are a major cause of sickness absence from work in developed countries. The longer individuals are away from the workplace, the less likely they are to return. By ensuring workers receive appropriate workplace adaptations and appropriate health care services, the health and productivity of the Portuguese workforce will improve. However, health care resources in Portugal are unevenly distributed, particularly for secondary and tertiary care.

- Compensation for occupational diseases almost doubled between 1996 and 2002 to almost €50million. Vibrations and mechanical agents cause about 45 per cent of incapacity.
- Over 30 per cent of Portuguese workers report experiencing back pain each year. In the vast majority of patients with back pain no specific diagnosis is given.
- Just under 29 per cent of Portuguese workers suffer from muscular pain in their neck, shoulders and upper limbs.
- The Instituto Nacional de Estatística (INE) reports that about 1.6 million people in Portugal are affected by arthritic conditions.
- Between 31,000 and 70,000 people in Portugal have RA. RA is one of the most common reasons for general practitioner (GP) visits each year. It is estimated that almost a quarter of RA sufferers stop work within 5 years of diagnosis. This figure can rise to 40 per cent if the effects of related conditions such as depression, and cardiac and respiratory complaints are taken into account. The total cost of RA was estimated to be €745million.
- One estimate suggests about 0.7 per cent of individuals in Porto have AS.

Romania

Romania has undergone considerable growth and development in recent years. Since joining the European Union in 2007, improvements in health and social protection have been implemented in order to meet EU standards, and improvements continue. Despite these, poverty still plagues some population groups and income inequality is high. Now with the economic downturn, Romania is being hit hard.

The health of Romanian workers also plays an important role in economic productivity. Many lost working days are the result of MSDs, such as back pain, arm or neck strains, or diseases of the joints. MSDs are one of the most commonly reported causes of work-related ill-health in Romania. Therefore MSDs cost Romanian employers and the Romanian government a considerable amount of money in lost productivity.

- MSDs comprise the majority of work-related health problems. About 22 per cent of absence days are a result of MSDs from physical strain.
- Back problems are frequently reported as serious work-related health problems among Romanians. About 42 per cent of Romanian workers report experiencing back pain each year due to work, which is one of the higher proportions among European countries.
- About 30 per cent of Romanian workers report muscular pain in their neck, shoulders and upper limb disorders.
- Around 143,000 people in Romania have RA. The total costs of RA are estimated to be about €619million per year.

Slovakia

A healthy Slovakian workforce will drive improvements in productivity, which Slovakia will need to compete in an increasingly globalised economy. The overwhelming evidence suggests that worklessness is bad for health and that job retention and rehabilitation back into work can positively affect physical health, psychological well-being and raise people out of poverty. In Slovakia, many working days are lost through musculoskeletal disorders (MSDs) such as back pain, arm or neck strains or diseases of the joints. In fact, MSDs are one of the most commonly reported causes of work-related ill-health in Slovakia. From 1993–2007 the reported cases of MSDs increased by around 116 per cent. MSDS most likely cost Slovakian employers and the Slovak government a considerable amount of money in lost productivity.

- Back problems are frequently reported as serious work-related health problems among Slovakians. About 39 per cent of Slovakian workers report experiencing back pain each year due to work.
- About 30 per cent of Slovakian workers report muscular pain in their neck, shoulders and upper limb disorders. WRULDs can affect the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness and tingling sensations in the affected area.

- Around 36,000 people in Slovakians have RA. The total costs of RA are estimated to be about €179million per year.

Spain

The long period of Spanish expansion has been badly affected by the global economic downturn. As a result, a marked increase in unemployment with all its individual, social and economic consequences has been recorded. Furthermore, the health of Spanish workers is giving serious cause for concern. Over 1 million people are not healthy enough to drive the improvements in productivity that Spain needs to compete in an increasingly globalised, knowledge-based economy when the up-turn comes. There is also overwhelming evidence that worklessness is itself bad for health, and that job retention and rehabilitation back into work can positively affect physical health, psychological well-being and raise people out of poverty. Of all the causes of ill-health, chronic conditions have a strong impact on the working life of people who experience them; MSDs account for 20 per cent of all sick leave days.

Evidence shows that:

- Back pain is a very common complaint in Spain. Back conditions are responsible for more than 50 per cent of days lost for temporary disability and the total costs of low back pain are equivalent to 2 per cent of Spanish GDP. Low back pain is one of the most frequent reasons for primary care consultations and between 70 and 80 per cent of the Spanish population experience low back pain at some point in their lives.
- 27 per cent of Spanish workers have muscular pain in their neck, shoulders and upper limbs versus the EU 27 average of 23.8 per cent.
- Estimated prevalence of RA in Spain varies between 0.45 and 0.50 per cent. Patients with RA in Spain are on sick leave for an average of 39 days (in 6 months) and RA accounts for 0.83 per cent of all DALYs lost in Spain. The cost of RA to Spanish society exceeds €2,250billion per year and the annual cost per patient can reach €10,700.
- For SpAs, although there are no occurrence studies in the general population, the prevalence of these conditions among patients treated at rheumatology clinics has been estimated to be 13 per cent (range 8–16 per cent). Patients with AS are on sick leave because of their condition for an average of 46 days (in 6 months).

Sweden

The global economic crisis has had a significant impact on parts of the Swedish economy. However, once the up-turn arrives, the Swedish economy cannot afford for its recovery to be inhibited by a shortage of skilled, motivated and healthy workers. At least 19 per cent of the workforce is not healthy enough to drive the improvements in productivity that Sweden needs to compete in an increasingly globalised, knowledge-based economy.

Of all the causes of work-related ill-health 'stress' receives the majority of the public's attention because it accounts for 26 per cent of all working days lost each year in Sweden. The number of working days lost to stres might be high, but more than 35 per cent of working days are lost through MSDs. MSDs are the most commonly reported cause of work-related ill-health in Sweden. The direct cost of absence from work in Sweden is estimated to be at least SEK170billion.

- Low back pain is the most common chronic disease for those aged under 65 in Sweden. In 2001, expenditure on back pain represented 11 per cent of the total cost of short-term sick leave in Sweden and about 13 per cent of all early retirement pensions granted were related to back pain. Over 28 per cent of Swedish workers report work-related back pain (EU average 26 per cent). It appears that the prevalence of low back pain has increased slightly. Among workers with back pain, the prevalence of psychological distress rose considerably between 1990 and 2006. One estimate suggests that chronic low back pain costs €20,700 per patient, of which 85 per cent was attributed to indirect costs associated with absence from work, early retirement and other factors.
- Just under 39 per cent of Swedish workers report that they have experienced muscular pain in their neck, shoulders and upper limbs. This compares with an EU average of 24 per cent. Several Swedish studies highlight the role of these conditions as causes of sickness absence and work-related incapacity.
- There are between 40,000 and 60,000 people with RA in Sweden. Swedish research highlights the high incidence of work disability among people with RA in the year immediately after diagnosis. RA is estimated to cost almost €13,000 per patient annually (€768million per year).
- One estimate suggests that there were about 8,300 in-patients with AS in Sweden in 1995. However, this likely underestimates the true number.

Switzerland

Although Switzerland has been enjoying a vigorous economic expansion for many years, productivity is well below levels observed in leading countries, reflecting relatively weak productivity performance in sectors not exposed to international competition. Now that global economic growth is slowing, and that the buoyancy of the Swiss labour market might be diminishing, the imperative to maximise labour productivity and ensure that the workforce is equipped to take full advantage of the up-turn in the economy has intensified still further.

In this respect the health of Swiss workers is giving serious cause for concern. Approximately 1 million people live with a health problem that disables them to some degree and on average Swiss people are not fit for work 9 days a year. Among the causes of absence for health reasons MSDs are the main ones; they constitute a third of all the consultations with general practitioners (GPs). The cost of MSDs in Switzerland has also been estimated to be about CHF2–4billion per year.

Evidence suggests that:

- Back pain is a common complaint in Switzerland, though good data on prevalence is not collected systematically. Every year, sickness absence caused by back and cervical pain costs the Swiss economy CHF2.5–3billion.
- About 13 per cent of Swiss workers report that they have experienced muscular pain in their neck, shoulders and upper limbs.
- One recent estimate is that there are 49,000 people with RA in Switzerland. RA accounts for 0.96 per cent of all DALYs lost in Switzerland and the cost of this condition to society is enormous: €23,982 per patient per year – the second highest after Iceland.
- Ankylosing spondylitis (AS) is a specific progressive and chronic rheumatic disorder whose prevalence in the general population is most commonly reported to be 0.1–0.2 per cent, with a 3:1 to 2:1 male: female ratio. Unemployment rates among people with this condition are three times higher than in the general population. In Switzerland data from the Swiss Clinical Quality Management show that among patients included in the register 78 per cent are employed and about half of them are in full-time employment. Out of the 23 per cent of people who are partly employed, 56 per cent have reduced their workload because of their condition, while 6 per cent are either taking some training or looking for work. In addition, because of AS, 14 per cent had to re-train, 24 per cent had to change job and 14 per cent had problems in finding a new job.

Turkey

Over the past two decades Turkey has successfully shifted to a growth strategy based on open and competitive markets. After the most severe of a succession of ‘boom and bust’ cycles in 2001, a fundamental fiscal, monetary and institutional reform package was implemented. However, recurrent macroeconomic instabilities have slowed down trend growth. Turkey is currently in a difficult transition period between its successful exit from ‘post-crisis recovery’ to a sustainable path of high growth. Reducing barriers to formal employment and encouraging female participation in the labour market is one of Turkey’s main challenges for the years to come. In this delicate transitional period, the imperative to maximise labour productivity and to ensure that the workforce is equipped to take full advantage of the up-turn in the economy has intensified still further. However, in 2002 12.3 per cent of the population had a disability and out of this 9.7 per cent had a chronic illness; 53 per cent of men and 93 per cent of women with chronic illness were not in the labour force. There is overwhelming evidence that worklessness is itself bad for health and that job retention and rehabilitation back into work can positively affect physical health, psychological well-being and raise people out of poverty. As Turkey proceeds with reforming its institutions, it is important to ensure that those with illness or long-term conditions are taken into consideration.

MSDs have a significant impact on people's ability to work; not only on an individual basis, but also on an aggregate basis. Together they affect the productivity and labour market participation of thousands of Turkish workers. Evidence suggests that:

- Back pain is a very common complaint in Turkey, though good data on prevalence is not collected systematically. Different studies have looked at different categories of workers and found that lower back pain is much more common than other musculoskeletal complaints. Lifetime, 12-month period and point prevalence of low back pain in Turkey is 44.1, 34 and 19.7 per cent respectively.
- 33.5 per cent of Turkish workers report that their work causes muscular pain in their neck, shoulders and upper limbs.
- The prevalence of RA in the general Turkish population is 0.36 per cent and the ratio of female to male 3.7:1. RA has a negative impact on patients' quality of life and mental health and its total cost to Turkish society has been estimated to be €5, 533 per patient per year.
- The prevalence of SpAs in western Turkey has been estimated to be equal to 1.05 per cent, with women having a higher prevalence than men (1.22 versus 0.88 per cent respectively), while prevalence of AS has been reported to be equal to 0.49 per cent. The mean retirement age of patients with AS in Turkey is 36 +/- 4.2 years.

United Kingdom

The economic downturn is hitting the UK hard. The consequences for the British labour market have been especially difficult, partly because of the speed with which unemployment has risen with all its individual, social and economic ramifications.

The health of British workers is also giving serious cause for concern. Of all the causes of work-related ill-health 'stress' grabs the headlines because it results in the loss of 11 million working days each year at a cost to UK employers in excess of £3.7billion. However, amid the understandable concern about stress and the psychological well-being of the UK workforce, one fact seems to have become obscured. The number of working days lost to stress might be high, but almost twice as many workers are affected by musculoskeletal disorders (MSDs). Indeed, MSDs are, by some margin, the most commonly reported cause of work-related ill-health in the UK, affecting an estimated 1,012,000 people in 2005–2006 – twice as many as those suffering from stress. In 2005–2006 MSDs were responsible for 9.5 million lost working days, an average of 17.3 days absence for each person suffering from an MSD. The cost of these conditions to society has been calculated to be over £7billion.

MSDs have a significant impact on people's ability to work; not only on an individual basis, but also on an aggregate basis. Together, they affect the productivity and labour market participation of over 1 million members of the working population. Evidence suggests that:

- Over 2.5 million people in the UK visit their GP with back pain each year. At any one time 33 per cent of the UK population are suffering with back pain and up to 80 per cent of the adult population will suffer significant back pain at some time in their life. In the vast majority of patients with back pain no specific diagnosis is given.
- Over 375,000 people suffer from symptoms of work-related upper limb disorders (WRULDs), which can affect the tendons, muscles, joints, blood vessels and/or the nerves and may include pain, discomfort, numbness and tingling sensations in the affected area.
- Almost 400,000 people in the UK have rheumatoid arthritis (RA), with 12,000 new cases being diagnosed each year. It is estimated that almost a quarter of RA sufferers stop work within 5 years of diagnosis. This figure can rise to 40 per cent if the effects of related conditions such as depression, cardiac and respiratory complaints are taken into account.
- Ankylosing spondylitis (AS) is a progressive and chronic rheumatic disorder that mainly affects the spine, but can also affect other joints, tendons and ligaments. Over 200,000 people visit their GP with AS every year. Reported unemployment rates are three times higher among people with ankylosing spondylitis than in the general population. It is a condition that is most often diagnosed among men in their early twenties and, in the most serious cases, can severely curtail the working lives of sufferers.

A selection of intervention case studies for musculoskeletal disorders (MSDs) is presented below. The interventions vary from labour market and clinical interventions, as well as by condition. Where possible we selected interventions that provided some cost analysis. However, the availability of such studies was limited.

The case studies provided are organised here by intervention focus: general health, MSDs, back pain and rheumatic conditions.

General health interventions

Finnish case study: Targeted occupational health intervention

Introduction: To provide high-risk employees in the construction and service and maintenance industry a targeted occupational health intervention.

What approach was taken? All employees completed a health questionnaire to identify their risk for sickness absence. The employees were divided into low risk, intermediate risk and high-risk groups. The high-risk group included people who responded that they had pain, impairment due to musculoskeletal problems, sleep problems, high levels of stress or fatigue, or a high depression score.

Once identified as high risk, the employees received a targeted occupational health intervention, which was provided by the company's own occupational nurses and physicians. The employees received personal feedback from their health questionnaire. They were also invited to attend a consultation at their local occupational health service (OHS). The aim of the consultation was to construct an action plan and if appropriate refer the employee to a specialist or psychologist. The visits to the local OHS were predefined and included procedures on how to further diagnose diseases and rules for further actions according to detailed descriptions.

After the consultation the occupational nurse compiled a personal file for each employee with information about the treatments and health advice received at the OHS, the referrals to further evaluation or interventions, the considerations of OHS professionals that no further actions were needed, and the refusals of some employees to take further action as appropriate.

What were the results? Employees who participated in the intervention had fewer days absent and used less health care resources. However, health outcomes for the employees participating in the programme did not significantly improve. The use of the health survey allowed for the identification of workers at risk for specific diseases. For these employees 45 per cent were referred to a specialist or specific intervention to address a newly identified health problem. Compared with usual care, the intervention was eventually cost-saving due to decreased sickness absence days and less use of health care resources. The health survey identified employees who were at high risk of sickness absence and work disability. By focusing on the high-risk employees, OHS can provide targeted interventions that address their health needs.

Source: Taimela et al,. 2008

Belgian case study: Intro_DM – reintegration of workers with long-standing health problems (LSHP)

Introduction: While employers, doctors and state agencies are frequently aware of the benefits of work for people with long-standing health problems, more often than not the lack of coordination between the different actors involved in the reintegration process results in missed opportunities, lost skills, long-term unemployment and social exclusion.

What approach was taken? To address and improve this situation the **Intro_DM** partnership has been developing two new job profiles to support reintegration in the Belgian workplace: the Disability Manager (DM) for implementing and overseeing disability management policy within companies; and the Disability Case Manager (DCM) to offer individual support within the reintegration process.

Each of the partnership 'lead partners' already has the relevant experience required to develop these new roles. Prevent, a Belgian multidisciplinary institute working on the prevention of occupational risks by promoting quality in working conditions and improvements in work organisation, is a specialist providing support, advice and information to companies, institutions and other social actors. UCBO-University Ghent is a vocational training and coaching centre for people with disabilities, which has an extensive record of assisting individuals with the integration process through individual coaching and training.

Source: Prevent (2007), Disability Management – Added value for job retention and reintegration, Intro_DM, available at: www.introdm.be

Portuguese case study: Vocational rehabilitation

Introduction: The Gaia Vocational Rehabilitation Centre (CRPG) in northern Portugal seeks to address the needs of workers with disabilities and the changes to the work environment with the aim of promoting individual rights and equality of opportunities. The programme provides rehabilitation and reintegration services for individuals who are affected by illness or injury, as well as unemployed individuals who have additional job-seeking needs.

What approach was taken? To address rights and equality of opportunities, the programme provides professional retraining, eliminates barriers and promotes compatibility. The services offered include the following:

- Guidance and employment support through vocational guidance and career management advice;
- Physical functional rehabilitation and technical aid through consultancy and assessment services, along with client training and counselling;
- Vocational training through skills development;
- Disability management through intervention planning and facilitation.

What were the results? The programme reached 1,520 clients in 2006 with most reporting a high level of satisfaction (over 80 per cent) and a majority (67 per cent) reporting integration within a professional setting.

Sources: Eurofound, 2006; Gaia Vocational Rehabilitation Centre, Portugal, 2007

Musculoskeletal disorder interventions

Swedish case study: Cognitive behavioural therapy for musculoskeletal pain

Introduction: An initiative in south-western Sweden to prevent, through early intervention, long-term absence from work among people with musculoskeletal pain was evaluated by researchers from the Multidisciplinary Pain Clinic at the Primary Care Region, Skane, Malmo and the National Research Centre for the Working Environment in Denmark.

The south-western healthcare region of Sweden – centred on Malmo – has a population of approximately 350,000 people. From November 2000, for a period of 16 months, the project was based at one of the 54 primary health care physiotherapy clinics in the region. People of working age (18–65 years) who were on sick leave and who had no more than three months of pain-related sick leave during the previous year were eligible for inclusion. These data were based on both self-reports and verified through the database of the National Social Insurance Board.

During the first visit participants were asked to complete a self-completion questionnaire (the Orebro Musculoskeletal Pain Questionnaire – OMPQ-r). The 575 participants who reached this stage of the project (from an original group of 2,550) were then randomly assigned to an intervention group (194) and a control group (381). The groups were similar on a number of socioeconomic indicators.

What approach was taken: There were several stages to the intervention:

Work disability assessment: Each participant was rated by a physiotherapist on a 1–11 scale, which indicated the probability of a return to workability by receiving a specific treatment.

Development of a team-based functional behaviour analysis tool: This method, a form of Cognitive Behavioural Therapy (CBT), involved the development of a four-factor model focusing on four external sources of risk: community, workplace, family and health care. Here, clinicians would be able to identify whether these aspects of lifestyle were likely to affect MSD severity or the chances of recovery. A further three-factor tool was developed to assess the participant’s scores on cognition, behavioural and physio-psychological scales.

Clinical application of tools: Through the use of interviews and physical examinations the primary care teams were able to assess which form of team-based rehabilitation would be most beneficial to up to nine groups of participants, depending on the nature of their conditions. Some of these interventions involved CBT sessions and others focused more on physiotherapy, which were then administered for a year.

What were the results? Compared with those in the control group, those participants in the intervention group had 5 per cent less sickness absence over the year of the study. In the control group, a total of 91.7 days of compensated absence were taken per person, compared with 76.9 per person in the intervention group – a reduction of 14.8 days per person per year. This reduction has been calculated as representing a reduction in social security expenditure of €236,357 during the year of the study. The cost of the intervention (staff salaries, premises and materials) was calculated as €235,681 over the same period. Thus, the intervention appeared to cover its costs in the first year, even though social security payments were the only measure used. By including other benefits (productivity, other social benefits etc) the intervention was likely to make a significant economic and social impact net of the costs of the intervention itself.

Source: Ektor-Anderson et al., 2008

Danish case study: Coordinated and tailored work rehabilitation

Introduction: In Denmark the magnitude and impact of work disability on the individual worker and society has prompted the development of a new ‘coordinated and tailored work rehabilitation’ (CTWR) approach. The aim of this project was to compare the effects of CTWR with conventional case management (CCM) on return-to-work (RTW) of workers on sick leave due to musculoskeletal disorders (MSDs).

What approach was taken? The study was a randomised controlled trial with economic evaluation undertaken with workers on sick leave for 4–12 weeks due to MSDs. CTWR consists of a work disability screening by an interdisciplinary team followed by the collaborative development of a RTW plan. The primary outcome variable was registered cumulative sickness absence hours during the 12-months follow-up. Secondary outcomes were work status as well as pain intensity and functional disability, measured at baseline, 3 and 12-months follow-up. The economic evaluation (intervention costs, productivity loss and health care utilisation costs) was based on administrative data derived from national registries.

What were the results? For the time intervals 0–6 months, 6–12 months and the entire follow-up period, the number of sickness absence hours was significantly lower in the CTWR group compared to the control group. The total costs saved in CTWR participants compared to controls were estimated at US$1,366 per person at the 6-months follow-up and US$10,666 per person at the 12-months follow-up.

Conclusions: Workers on sick leave for 4–12 weeks due to MSD who underwent CTWR by an interdisciplinary team had fewer sickness absence hours than controls. The economic evaluation showed that, in terms of productivity loss, CTWR seems to represent a cost saving for society.

Source: Bültmann et al., 2009

Dutch case study: RSI@Work: Work style intervention for recovery from neck and upper limb symptoms in computer workers

What approach was taken? The randomised controlled trial compared outcomes for individuals participating in two different intervention groups and a usual care group. The participants were workers in one of seven Dutch companies. After 6 months and 12 months, participants were assessed.

The interventions were developed using theoretical models of behaviour change. The goal of the interventions was to change behaviours in work style and lifestyle. For work style, the intervention aimed to change body posture, workplace adjustments, breaks and coping with high work demands. For lifestyle, the intervention aimed to increase engagement in moderate- to heavy-intensity physical activities.

Both the work style and lifestyle plus work style interventions were similar. The participants attended six interactive group meetings that occurred about every 4 weeks. Four of the meetings were large group meetings focused on providing information and raising awareness. Two of the meetings were smaller and provided tailored advice for encouraging behaviour change. Each meeting lasted about an hour and a half.

What were the results? The work style intervention reduced pain outcomes at the 12-months follow-up mainly for workers with neck and shoulder symptoms. The work style and physical activity intervention was not found to be effective.

Conclusion: A group-level intervention seeking to change work style behaviour reduced long-term pain in computer workers with neck and upper limb symptoms.

Source: Bernaards, Ariens, Knol and Hildebrandt, 2007

Back Pain Interventions

Canadian case study: The Sherbrooke model intervention

Introduction: To reduce chronicity of back pain and as a result reduce the costs associated with long-term absence from back pain among workers in the manufacturing, services and health care industries. By investing early in targeted interventions of disability prevention the costs associated with disability would decrease.

The Sherbrooke model intervention: The model included an occupational and clinical intervention. With most cases of back pain (about 70 per cent) resolving themselves within 4 weeks, this intervention targeted higher risk and more costly cases by trying to prevent prolonged absence and long-term disability. Therefore after 6 weeks of absence from work employees began the occupational intervention. This included visits to the workplace by an occupational health physician, as well as a visit from an ergonomist for a 'participatory ergonomic' intervention that included the injured worker, the supervisor, management and union representatives. Employers decided whether or not to implement the job modifications recommended by the ergonomist.

The clinical rehabilitation intervention began after 8 weeks of absence and included a clinical examination by a back pain medical specialist and participation in a back school. If improvements had not occurred by 12 weeks, then the worker participated in a multidisciplinary work rehabilitation intervention with the aim of a progressive return to work through fitness development and cognitive behavioural approaches. Health care providers encouraged early return to normal activity.

What were the results? The average number of days on full disability benefits was highest among people who received standard care (418.3 days) compared with the lowest average in the Sherbrooke model (125.6 days). All of the intervention groups reduced costs compared with standard care. Workers participating in the Sherbrooke model intervention returned to work more than twice as fast as those in individual care. The table below provides the cost details per worker for the interventions compared with standard care.

	1 year follow-up	5.4 years follow-up	Total costs	Cost benefit
Standard care	$7,133	$16,384	$23,517	$0
Clinical care	$6,458	$ 3,586	$10,045	$16,176
Occupational care	$6,529	$ 6,291	$12,820	$16,827
Sherbrooke model	$6,515	$ 545	$ 7,060	$18,585

Conclusion: As the data indicate, the Sherbrooke model, which combined the clinical and occupational intervention, was most cost-beneficial and improved outcomes for workers.

Sources: Loisel, et al., 1997; Loisel, et al., 2002

Dutch case study: Adaptation of the Sherbrooke model

Introduction: Low back pain affects a large number of Dutch workers and is a major cause of sick leave in the Netherlands. To reduce the impact of low back pain on productivity, an intervention was developed to provide multidisciplinary rehabilitation.

What approach was taken? The intervention adopted the Canadian Sherbrooke model by Loisel et al. to the Dutch socioeconomic context. The workplace intervention consisted of a work site assessment and adjustment using the principles of participatory ergonomics. The main intervention team comprised an ergonomist, the injured worker and the worker's supervisor. The ergonomist observed the worker completing his or her tasks. The worker and supervisor both independently ranked the obstacles to returning to work. The ergonomist then organised a meeting for all stakeholders where everyone discussed and brainstormed possible solutions. In addition to this meeting, the occupational health professional and GP provided feedback through a short communication form to prevent any conflicting advice about return to work.

Graded activity introduced at 8 weeks was also examined. The graded activity intervention included a gradually increasing exercise programme that was tailored to the individual.

Participants were randomised into intervention and control groups after being on sick leave for 2–6 weeks due to low back pain.

What were the results? The workplace intervention lasted on average 24 days. For individuals participating in the workplace intervention, the time off work was 77 days compared to 104 days for individuals receiving usual care, which was a significant difference. More individuals in the usual care group (17.2 per cent) did not return to their full work for a long-lasting period during the 12-months follow-up compared with the workplace intervention group (9.4 per cent). Additionally functional status was slightly better in the workplace intervention group compared with the usual care group. The graded activity intervention was not more effective in returning individuals to work.

Conclusion: Workplace interventions that include a multidisciplinary rehabilitation programme early on in the sick leave time have the potential to reduce sick leave.

Source: Anema, et al., 2007

Austrian case study: Combined exercise and motivational programme

Introduction: The intervention aimed to improve the outcomes of workers with chronic low back pain by offering a combined exercise and motivational programme.

What approach was taken? The trial included two groups – a standard exercise group (control) and a combined exercise and motivational programme group (experimental). Both groups received 10 treatment sessions of equal duration – about 25 minutes per session, two to three times per week. All patients were advised to exercise and remain physically active at home as well. The goal of the exercise programme was to improve spinal mobility, trunk and low limb muscle length, force, endurance and coordination, with the optimal outcome of restoring normal function.

The motivational programme provided extensive counselling and education to patients; enhanced the patients' internal locus of control by educating them about the influence their actions have on their outcome; provided reinforcement through positive feedback and the development of a reward and punishment strategy for practising treatment recommendations; developed treatment contracts that were negotiated between the therapist and the patient and posted in the patient's home as a form of reinforcement; and encouraged patients to maintain an exercise diary.

What were the results? Work ability did not increase immediately during the exercise therapy. However, significant improvement in the motivational group occurred between the first treatment and the 4-month follow-up period, as well as between the first treatment and 5-year follow-up period. No improvement occurred in the exercise-only group. Overall, between 12 months and 5 years the outcomes for the motivational group were twice as good in terms of reduced long-term disability.

Conclusion: The combination of exercise therapy with a motivational programme can improve long-term disability and pain associated with chronic low back pain, as well as significantly impact on working ability.

Sources: Frederich, Gittler, Arendasy and Friedrich, 2005; Frederich, Gittler, Halberstadt, Cermak and Heiller, 1998

Irish case study: The Renaissance Project

This DSFA-supported project aimed to target early interventions to prevent chronic disability from low back pain.

What approach was taken? Between January and June 2003, 3,300 new claimants for Disability Benefit and Injury Benefit with GP-certified low back pain (LBP) were selected for participation in the project. All subjects were between 20 and 50 years of age. A matched control group of claimants was also selected as a comparator.

Of the initial 3,300 claimants, the following outcomes were reported:

- 1,700 (51 per cent) returned to work within 4 weeks;
- 1,600 were selected for early referral and asked to attend a medical assessment at a point 4–6 weeks after claiming (much earlier than normal);
- Of these 1,600, a total of 1,000 decided to return to work and were not medically assessed;
- The remaining 600 were assessed using a diagnostic triage approach. The medical assessments placed claimants into one of three categories. Those with simple back pain (95 per cent), those with nerve root pain (3–5 per cent) and those with a potentially serious spinal pathology (1–2 per cent of cases). Claimants in the simple back pain category were assessed for their work capability, taking into account symptom severity, occupation, potential for work restriction and potential to change the demands of the job.

What were the results? The proportion of claimants progressing from simple back pain to chronic disability fell with 64 per cent assessed to be capable of work compared with 20 per cent of claimants assessed during the previous year. There was also a reduction in the number of claimants appealing against their assessment (44 per cent versus 61 per cent). Compared with the control group there was a 40 per cent reduction in claims that progressed to a long duration and a saving of over €560,000 compared with the previous year.

What happened next? The study was regarded as a success, especially as it demonstrated that targeted early intervention with low back pain could reduce progression to chronic disability, improve the health of claimants and reduce healthcare costs, reduce absence from work, improve productivity and yield savings for long-term benefits schemes. The project was extended beyond its original scope and has produced further positive results.

Source: Department of Social and Family Affairs, 2004

Belgian case study: Multidisciplinary back rehabilitation programme

Introduction: In 2005 the Fund for Occupational Diseases (FOD) began a project to help manage back pain among nursing staff in both general and geriatric hospitals in Belgium. The study had no control group.

What approach was taken? A pilot intervention was put in place for those nursing staff judged to be exposed to back pain 'risk factors' in hospital settings. The FOD has 45 rehabilitation centres across Belgium. These were used to provide preventative and rehabilitation support to those with back pain. The volunteers were selected from a targeted population of nurses who routinely performed manual handling and lifting tasks who had been away from work due to non-specific low back pain for a minimum of 4 weeks and a maximum of 3 months.

Baseline data about each volunteer was collected by questionnaire at the start of the pilot study. Volunteers were eligible for a maximum of 36 physical therapy sessions of two hours duration. This contained a psychosocial element examining both pain management and the emotional component of back pain. In addition inputs from a trained ergonomist focused on physical work demands.

What were the results? During the first phase of the work 102 volunteers were recruited who met the selection criteria. Of these, 91 were recruited to the study, of whom 83 went on to participate fully in the intervention. By the end of the pilot study 74 participants remained. Almost 80 per cent of participants had returned to work before the eighteenth rehabilitation session and 99 per cent before the end of the thirty-sixth session. The study highlighted a number of concerns among participants, most notably concern that being encouraged to take part in physical exercise sessions would aggravate their back pain, together with issues of privacy – many of the sessions took place in the participants' own workplaces. It also emerged that many of the participants' family doctors were concerned about their participation in the study and had themselves only prescribed passive treatments (eg anti-inflammatory drugs). The evaluation of the pilot study also found that many employers – even in the health sector – had strongly-held beliefs about early return to work, ie that workers must be 100 per cent fit.

What happened next? In 2007 the project was extended to all workers in Belgium, regardless of industry, if they are exposed to significant back pain factors. The next wave of the project attracted 284 volunteers, 71 per cent of whom were women. Two-thirds were still from the health care sector, though more than 6 per cent were from the construction sector.

Source: Mairiaux, (2008).

Norwegian case study: Does early intervention with a light mobilisation programme reduce long-term sick leave for low back pain? A 3-year follow-up study

Introduction: Results from a previous study showed that early intervention with examination at a spine clinic that gave patients information, reassurance and encouragement to engage in physical activity had a significant effect in reducing sick leave. At the 12-months follow-up, 68.4 per cent in the intervention group were not on sick leave compared with 56.4 per cent in the control group. Patients in this study were followed-up for a period of 3 years to investigate possible long-term effects.

What approach was taken? 457 patients placed on a sick list for 8–12 weeks for low back pain were randomised into two groups: an intervention group (n = 237) and a control group (n = 220). The intervention group was examined at a spine clinic and given information and advice to stay active. The control group was not examined at the clinic and treated within primary health care.

What were the results? Over the 3 years of observation, the intervention group had significantly fewer days of sickness compensation (average 125.7 d/person) than the control group (169.6 d/person). This difference is mainly caused by a more rapid return to work during the first year. There was no significant difference for the second or third year. In particular, there is no increased risk for reoccurrence of illness from early return to work. At the 6-months follow-up, patients in the intervention group were less likely to use bed rest and more likely to use stretching and walking to cope with their back pain compared with the control group. This effect diminished. At the 12-months follow-up, the only significant difference between the groups was in the use of stretching. The economic returns of the intervention were calculated in terms of increase in the net present value of production for society because of the reduction in number of days on sick leave. Net benefits accumulated over 3 years of treating the 237 patients in the intervention group amount to approximately $2,822 per person.

Conclusions: For patients with sub-acute low back pain, a brief and simple early intervention with examination, information, reassurance and encouragement to engage in physical activity as normal as possible had economic gains for society. The effect occurred during the first year after intervention. There were no significant long-term effects of the intervention. The initial gain obtained during the first year does not lead to any increased costs or increased risks for reoccurrence of illness over the next 2 years.

Source: Molde Hagen, Grasdal and Eriksen, 2003

Rheumatic condition interventions

Spanish case study: Cognitive behavioural treatment

Introduction: To evaluate whether an early cognitive-behavioural treatment complementary to a rheumatologic care programme for patients with recent-onset temporary work disability caused by musculoskeletal disorders (MSDs) is effective.

What approach was taken? Patients with an MSD-related temporary work disability episode of 3–8 weeks duration who were in a rheumatologic care programme were randomised into a control group (rheumatologic care programme) or an intervention group (rheumatologic care programme, plus cognitive-behavioural treatment).

Enrolment lasted 24 months and follow-up lasted 6–24 months. Efficacy variables included duration of temporary work disability episodes, total number of work days saved, relative efficacy and relative rate of return to work. An economic evaluation was also performed.

What were the results? One hundred and eighty-one patients were included (66 control and 115 intervention patients), generating 222 episodes of MSD-related temporary work disability. Episodes tended to be shorter in the intervention group than in the control group (mean 98 versus 127 days; $P = 0.053$), with a relative efficacy of 22.9 per cent. There were no differences in duration of the first episode between groups (mean 105 versus 110 days; $P = 0.79$), but relapse episodes were significantly shorter in the intervention group (mean 63 days versus 197 days; $P = 0.0002$). Costs were also lower in the intervention group. To save 1 day of temporary work disability, $13.50 had to be invested in the programme. Each dollar invested generated a benefit of $4.08. The programme had a net benefit of $172,607.

Conclusion: Early cognitive-behavioural treatment complementary to a rheumatologic care programme is cost-effective, adds > 20 per cent efficacy to the rheumatologic care programme and reduces the duration of relapses

Source: Leon, Jover, Candelas, Lajas, Vadillo, Blanco et al., 2009

French case study: Early occupational therapy programme increases hand-grip strength at 3 months: results from a randomised, blind, controlled study in early rheumatoid arthritis

Introduction: The goal of occupational therapy (OT) is to facilitate adjustments to lifestyle and to prevent function loss. This study evaluated the effects of an early OT programme in early rheumatoid arthritis (RA).

What approach was taken? A randomised, blind, controlled trial enrolling 60 patients with early RA divided into two groups was conducted.

At baseline, group 1 received the full information programme and group 2 received no information.

In an extension phase, patients in group 2 received the full information programme at 3 months and were assessed at 6 months.

The main outcomes were grip strength of hands (as objective assessment) and Health Assessment Questionnaire (HAQ) score (as subjective assessment).

What were the results? At 3 months, grip strength of the dominant and non-dominant hands increased more in group 1 than in group 2 ($p = 0.021$ and 0.047 respectively). HAQ score decreased more in group 1 than in group 2 ($p<0.001$).

In the extension phase, changes in grip strength and HAQ score in group 2 were similar to those seen in group 1 between baseline and 3 months.

Conclusions: This study comparing two schedules of an OT programme showed that an early extended-information programme improved hand function in patients with early RA.

Source: Mathieux, Marotte, Battistini, Sarrazin, Berthier and Miossec, 2009

Austrian case study: Early arthritis clinic

Introduction: In an effort to improve access to appropriate treatment the Austrian Early Arthritis Action programme was established in 1995 at a national level. The main aim of this clinic was to fast-track patients to specialists by reducing waiting times to less than 2 weeks for individuals displaying symptoms for less than 12 weeks.

What approach was taken? In order to improve referrals the programme sought approval from stakeholders, published educational articles in the Austrian Chamber of Physicians journal, the Österreichische Ärztezeitung, and promoted education about the signs and symptoms of arthritis through the media, as well as logistically established the early arthritis clinics.

What were the results? Of the patients participating in the programme, significant improvements in RA outcomes within a year occurred as a result of successful therapy, as well as spontaneous remissions. However, after 3 years, of the small number of patients remaining in the study, joint damage did occur in a number of patients despite early treatment with disease-modifying antirheumatic drugs (DMARDs). On the other hand, the percentage of people with joint damage was lower compared to other populations.

Conclusions: This suggests that early treatment may prevent erosive disease damage, at least in some patients.

Sources: Machold et al., 2003; Machold et al., 2007

Italian case study: Early arthritis clinics

Early arthritis clinics in Italy provide people with early arthritis symptoms facilitated access to health care services in order to receive an early diagnosis (within 15–20 days maximum) and start the appropriate treatment in the shortest time possible.

Early arthritis clinics have proved to be effective not only in successfully reducing the time between onset of the conditions and diagnosis, but also in greatly improving clinical remission. Among the 15 rheumatology units that constitute the GISEA, the rheumatology unit at the Università Cattolica del Sacro Cuore in Rome was the first centre to adopt the early arthritis clinic methodology in January 2006. It guarantees that patients see a rheumatologist within a maximum 72 hours and in any case within 15 days from the first symptoms. After the visit patients receive blood tests, x-rays of the joints affected and further tests when necessary in order to ensure that the best therapy is provided in the shortest time possible.

Similarly, the Fondazione Policlinico IRCCS San Matteo in Pavia bases its intervention for people with RA, PsA and AS on early diagnosis and evaluation of the gravity of the condition, immediate treatment with DMARDS (for people with RA and PsA), accurate evaluation of disease progression and change of treatment in cases of absence of clinical remission of the condition.

Source: Expert interviews

Germany case study: RheumaCheck and RheumaCheck Express

Introduction: Early diagnosis of inflammatory rheumatic diseases is crucial for a patient's prognosis and outcome. In Germany the mean time delay between initial symptoms and first rheumatologist contact is 1–5 years. In order to reduce the delay in contact and support early diagnosis, the *RheumaCheck* and *RheumaCheck Express* programmes were developed. The *RheumaCheck* study developed a patient questionnaire with high sensitivity and specificity, as well as a high positive predictive value, aimed at identifying inflammatory rheumatic diseases. A second part of the programme was the bus tour, *RheumaCheck Express*, which was an 'open clinic' to screen individuals.

What approach was taken? The *RheumaCheck* questionnaire was based on the FDA-approved Connective Tissue Disease Screening Questionnaire. One thousand, four hundred and forty-eight patients [195 without (13.5 per cent), 439 suspicious for (30.2 per cent) and 816 (56.4 per cent) with known inflammatory rheumatic diseases] recruited by rheumatologists and general practitioners answered the questionnaire (30 questions), which also collected information on co-morbidities and sociodemographic data. With the information collected, a predictive algorithm was calculated.

The *RheumaCheck Express* stopped in 24 cities in North-Rhine-Westfalia. Two thousand, six hundred and sixteen visitors were screened by a rapid diagnostic blood test and answered the *RheumaCheck* questionnaire. The results were calculated and indicated the risk for having a rheumatic disease. Visitors with discomfort and positive results for either the RheumaCheck or one of the antibodies were seen by a rheumatologist in the bus. A local rheumatologist followed up with visitors who, after the interview with the rheumatologist on the bus, were still suspected of having a rheumatic disease.

What were the results? RheumaCheck: The average age for the complete group (73.1 per cent female) was around 52.5 years and the majority (53.1 per cent) had no co-morbidity. The predictive algorithm yielded a high sensitivity (77.6 per cent) and specifity (79.9 per cent).

RheumaCheck Express: The majority of the *RheumaCheck Express* attendees were older (60.5 per cent of all visitors were 60 years and older) and female (74.2 per cent). Most of the visitors came with discomfort in the locomotor system (80 per cent) and 26.8 per cent came because of a positive family history for rheumatic diseases. Overall 319 visitors (12.2 per cent) were judged as 'suspicious of having a rheumatic disease' in the bus and invited to the local rheumatologist for a follow-up visit. So far data on 122 visitors are available and 59 (2.5 per cent of all visitors) were diagnosed with an inflammatory rheumatic disease and 30 visitors (1.2 per cent) with newly diagnosed RA.

Conclusion: *RheumaCheck*: Being aware of a possible high rate of false true results, *RheumaCheck* is a simple, efficient instrument easily filled out by patients. It can identify the group of patients needing further investigation, care and assessment by a rheumatologist leading to earlier diagnosis and therapy.

The RheumaCheck Express as an 'open clinic' might be an instrument for screening populations for various rheumatic diseases. It might be possible to reduce waiting time in practices, find undiagnosed patients earlier and hence help to improve their outcome.

Sources: Richter, Wessel, Klimt, Willers and Schneider (2008); Iking-Konert et al. 2008
(RheumaCheck web version please see www.rheuma-check.de)

Appendix F: Fit for Work interview questions

A. Prevalence and impact

1. Please tell us about the incidence of MSDs in the working age population and how this is changing within your country (eg trends over time, gender, age, occupational differences). Is there good evidence about the main factors that might account for these changes?
2. What is the 'typical' pattern of onset and progression with these MSDs? Are you getting better at early diagnosis? If so, what impact does (could) this have?
3. In the context of work, what are the primary effects of these MSDs on functional capacity, job retention, work effectiveness, productivity and wider labour market participation?
4. What other problems are associated with these MSDs (eg fatigue, concentration, mental health problems)? How do these affect the progress of the condition, return to work etc?

B. Responses and interventions

1. To what extent are employers aware of the impact of these MSDs on their employees, the design of their jobs and on the quality of their working lives? What are the strengths and weaknesses of employers' responses?
2. To what extent is your government aware of the impact of MSDs on productivity, reduced work effectiveness, mental health and labour market participation?
3. What interventions (eg drug therapies, physiotherapy etc) can help working age people with these MSDs return to and remain in work?
    - Is there any evidence on the cost and benefits of these measures?
    - What interventions from policymakers are needed to keep people in employment?
    - What interventions are needed from employers to maximise functional capacity and quality of working life?
    - Does the size of the organisation make a difference in terms of making reasonable adjustments to accommodate people with MSDs?
4. When people receive a diagnosis of these MSDs, which professional groups are associated with treatment or support? To what extent do these groups communicate? Do people fall between the gaps and, if so, what are the consequences?
5. How well equipped are GPs (General Practitioners) to diagnose these conditions and refer patients with MSDs? How good is their understanding of the occupational health implications? What can be done to ensure GPs are playing a constructive part in the management of these conditions for patients in work?
6. What provision is there within your country's health care system for people with these MSDs? How well equipped is the NHS (national health system) to provide early intervention, case management, rehabilitation and other support for those with these conditions (both newly diagnosed and those with long-term needs) to:
    - Retain their jobs;
    - Maximise quality of working life/contribution;
    - Maintain access to routes back into work for those who have had time away from work?

7. What examples of best practice exist in the management of these conditions in employment settings? What do these examples have to commend them and what can your government, the NHS and employers learn from them?

C. Future challenges

1. What will be the consequences of failing to improve our understanding, diagnosis, treatment and management of these MSDs for:
    - Individual workers;
    - Employers;
    - The government and the wider economy?
2. What three things could your government do to minimise the economic and social consequences of these conditions? Which interventions would have the most impact for the least cost?
3. What are the main barriers to the adoption of more enlightened and sustainable management of these conditions in employment settings? How could these barriers be overcome?
4. Are there any key resources or contacts that we should follow up as part of this study?

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