



Fit For Work?

Musculoskeletal Disorders and the Irish Labour Market



Supported by a research grant
from Abbott



Stephen Bevan
Robin McGee
Tatiana Quadrello





1. Executive summary	5
2. Introduction	9
2.1 Why is workforce health in Ireland important?	9
2.2 MSDs: The European context	11
2.3 Objectives of the study	12
2.4 A note on definition	13
2.5 Structure of the report	14
3. Work and MSDs in Ireland	15
3.1 An unclear picture	15
3.2 The impact of MSDs on ability to work	16
3.3 The impact of the workplace on MSDs	23
3.4 The wider economic and social impact of MSDs	26
3.5 Summary	31
4. Interventions	32
4.1 The case for early intervention	32
4.2 The social security regime for the work disabled	34
4.3 Condition-specific interventions	36
4.4 The biopsychosocial model and work	38
4.5 The role of employers	40
4.6 Summary	44
5. Conclusions and recommendations	45
5.1 Recommendations for employers	45
5.2 Recommendations for employees	46
5.3 Recommendations for GPs	47
5.4 Recommendations for occupational health professionals	48
5.5 Recommendations for government	49
References	51
Appendix 1: Interviews and consultation with experts	58
Appendix 2: Benchmarking grid	59

List of Boxes, Figures and Tables

Box 1: Early intervention case study – The Renaissance Project	33
Box 2: Principles of managing non-specific MSDs	42
Figure 3.1: Working age population in Ireland to 2045	16
Figure 4.1: Description of disability payments in Ireland	35
Table 2.1: Total expenditure on illness and disability payments by DSFA, 1988-2007	11
Table 3.3: Summary of intrinsic risk factors for non-specific MSDs	23
Table 3.4 Direct costs associated with MSCs, RA, and low back pain	28

1. Executive summary

The economic downturn is hitting Ireland hard. The consequences 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 ten of the workforce is not healthy enough to drive the improvements in productivity which Ireland 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 work-related ill-health, 'stress' grabs the headlines because it accounts for 20 per cent of all working days lost each year in Ireland. However, amid the understandable concern about 'stress' and the psychological well-being of the Irish workforce, one fact seems to have become obscured. The number of working days lost to 'stress' might be high, but more than twice the number 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 Ireland. The direct cost of MSDs at work in Ireland is estimated to be at least 750 million euros.

The 'Fit for Work?' project

This project, part of a wider programme of work across 24 European and other countries, has looked in some detail at the impact that MSDs have on the working lives of thousands of Irish workers, the adequacy of the treatment and support they receive, their experiences at work, the effect of their condition on their family and colleagues, and the human and financial costs involved. Specifically, we have looked at back pain, work-related upper limb disorders (WRULDs) – two groups of conditions which are usually characterised by non-specific and short episodes of pain and incapacity – and rheumatoid arthritis (RA) and spondyloarthropathy (SpA), specific conditions that are often progressive and increasingly incapacitating. We conducted a review of the recent academic and practitioner research on the relationship between these MSDs and labour market participation, and conducted interviews with acknowledged experts in this field.

The Impact of MSDs on the Irish workforce

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

- Over half 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. 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.

- Just under 60 per cent of Irish workers suffer from muscular pain in their neck, shoulders and upper limbs. 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.
- Almost 40,000 people in Ireland have RA, with 30 per cent of all GP visits each year being attributable to RA. It is estimated that almost a quarter of RA sufferers stop work within five 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. Arthritis Ireland estimate that the annual cost of lost productive time due to RA and other forms of arthritis was estimated at 1.6 billion euros.
- 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 44,000 people in Ireland have AS, and reported unemployment rates are three times higher among people with ankylosing spondylitis than in the general population. It is a condition which is most often diagnosed among men in their early twenties and, in the most serious cases, can severely curtail the working lives of sufferers.

The effects of incapacity and pain from these and other MSDs can impact on several aspects of an individual's performance at work, including:

- Stamina;
- Cognitive capacity or concentration;
- Rationality/mood;
- Mobility;
- Agility.

It is becoming clearer that MSD sufferers are also likely to have depression or anxiety problems related to their conditions. This can affect the severity of the condition, the ability of the individual to remain in work, the length of time they spend away from work and the ease with which they can be rehabilitated. Research suggests that a significant proportion of GPs, employers and even individual MSD sufferers do not fully appreciate the impact of 'stress' on the severity of physical incapacity. 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) and represents a helpful way of assessing the causes of some MSDs, of planning treatment and management and of approaching rehabilitation into the workplace. It is not being adopted as widely as it should, however, because many GPs and employers find it difficult to look beyond the immediate physical symptoms.

Work can be both cause and cure. Whilst the physical conditions of work may cause or aggravate musculoskeletal symptoms, the impact or outcome on sufferers (absence from work and disability) is strongly associated with psychosocial factors. Evidence suggests that work can help ameliorate the deterioration of many conditions and help recovery from MSDs. However, many GPs and employers mistakenly believe that workers with MSDs must be 100 per cent well before any return to work can be contemplated.

Looking to the future, with prospects for an ageing workforce, a growth in obesity, a reduction in exercise and physical activity and general fitness in the general population, it is likely that the incidence and effects of MSDs will intensify and worsen rather than improve in the medium-to long term. We are concerned that this will affect the quality of working life of many Irish workers, and that the productive capacity of the Irish workforce will be adversely affected at a time when we need it to be on top form.

What can be done?

There are five main principles which GPs, employers, employees and the government should focus on if we are to improve the working lives of workers with MSDs.

- **Early intervention is essential.** The overwhelming evidence is that long periods away from work are usually bad for MSD patients – the longer they are away from work, the more difficult it is for them to return. Early action, preferably in a partnership between GPs, 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. For some MSD patients early access to physiotherapy or to drug therapies can reduce the severity, impact or progression of the condition – a delay in diagnosis or treatment can make recovery, job retention or rehabilitation much more difficult. Once the economic upturn arrives – which it assuredly will – the Irish economy cannot afford for its recovery to be inhibited by a shortage of skilled, motivated and healthy workers.
- **Focus on capacity not incapacity.** Employers and employees can 'catastrophise' MSDs, imagining their effects to be far more serious or insurmountable than is strictly the case. Most workers with MSDs can continue to make a great contribution at work if they are allowed to. They do not need to be 100 per cent fit to return to work – a little lateral thinking will allow managers to give them useful work to do that supports them on their journey back to full productive capacity. For example, if GPs were asked to issue a 'Fit Note' rather than a 'Sick Note' then it would be clearer what the worker was still able to do at work. This approach is being introduced in the UK, and should be considered in Ireland too.

- **Imaginative job design is the key to rehabilitation.** Managers can change the ways work is organised (including simple changes to physical layout or to working time arrangements) to help prevent MSDs getting worse and to help people with MSD to stay in, or return to, work. They need to do this in a way which preserves job quality, avoids excessive or damaging job demands and takes heed of ergonomic good practice.
- **Think beyond the physical symptoms.** Clinicians should bring to bear their understanding of the biopsychosocial model and the limitations of the biomedical model in their diagnosis and treatment of the patient and – most importantly – their assessment of the role that a job might play in helping someone to stay active and avoid isolation. GPs are ideally placed to identify the early presentation of many MSDs. Where appropriate, GPs should seek to refer patients to specialist teams as early as practicable, to enable management of the condition to begin.
- **Assess the direct *and* indirect costs of MSDs.** We need some better measures to assess the social, economic and work impact of MSDs to allow the DFSA and the Department of Health and Children to assess and monitor both the clinical and labour market impact of MSDs in a more ‘joined-up’ way.

The evidence presented in this report illustrates that a large proportion of working age people in Ireland are, or will be, directly affected by musculoskeletal conditions (MSDs) in the coming years. This can have very significant social and economic consequences for these individuals and their families, it can impede the productive capacity of the total workforce and parts of Irish industry, and it can draw heavily on the resources of both the health system and the benefits regime.

We have found important clinical, epidemiological, psychological and economic evidence and expert opinion on the nature, extent and consequences of the MSD problem in Ireland. However, there still seems to be a lack of coherence or ‘joined-up’ thinking and action which focuses on the MSD **patient as worker**. While the number of advocates of the biopsychosocial model as it applies to all MSDs is growing, we noted that 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.

2. Introduction

2.1 The economic downturn is hitting Ireland hard. The consequences 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. Between May 1998 and May 2007 total employment in Ireland grew by 35 per cent. Unemployment was 17.5 per cent in 1987, but fell to 4.5 per cent in Q1 of 2007 (CSO, 2009). It has now risen to 11 per cent (CSO, 2009) and looks set to rise still further in the coming months. This dramatic turnaround in fortunes has a number of important implications.

**Why is
workforce
health
in Ireland
important?**

First, the competitiveness of the Irish economy has been – and will be – substantially driven by the skills, experience and knowledge of its workforce. Indeed Ireland has been making good progress towards becoming a ‘knowledge economy’ as envisaged by the EU’s 2000 Lisbon Strategy (Lisbon European Council, 2000). In 2002 Ireland’s ‘knowledge’ industries accounted for a higher proportion of its economy’s Gross Added Value than any other OECD country, and 41 per cent of the Irish workforce were classified as knowledge workers (Brinkley, 2006). Recent announcements by the Taoiseach to promote the concept of a ‘smart economy’ have re-affirmed this aspiration, but rely heavily on a skilled, available and healthy workforce (Department of the Taoiseach, 2008). The risk is that unemployment will drain the Irish economy of the much-needed skills and knowledge it needs and makes the longer-term vision of the ‘smart economy’ more difficult to attain and sustain.

Second, unemployment and job loss have serious financial and health consequences for individuals. Studies have shown widespread deterioration in aspects of physical and mental well-being among those who lose their jobs which can persist for many months (Armstrong, 2006; Brinkley, Clayton, Coats, Hutton, and Overell, 2008).

Third, it is essential that job loss is not concentrated in the most vulnerable parts of the workforce, especially among those with a disability or with a long-term or chronic health condition. Finding ways of improving job retention for these workers is vital as we know that, once they become detached from the labour market, their chances of finding meaningful work again are severely damaged.

Fourth, once the upturn arrives – which it assuredly will – the Irish economy cannot afford for its recovery to be inhibited by a shortage of skilled, motivated and healthy workers. It is on this last point which much of this report focuses.

Despite the benign economic conditions, the health and well-being of the Irish workforce has given cause for concern for a number of years, and these concerns will continue in the light

of both the economic downturn and of the ageing of the Irish workforce. A number of other indicators suggest that workforce health should remain an important priority for policy-makers and employers for the foreseeable future:

- Up to 11 per cent of the working age population in Ireland have a long-standing illness or injury which affects their ability to work (QNHS, 2004). By EU standards (where the average is 16 per cent) this is not a high figure, though the data suggest that the position is worsening as the population ages.
- The direct and indirect costs of temporary and permanent absence from work in 2006 were 3.6 billion euros or the equivalent of 2.5 per cent of GDP (Indecon, 2006).
- In excess of 63 per cent of those with a disability or health problem (aged between 15-64) were unemployed in 2004 (CSO, 2004).
- Irish people with chronic conditions and disabilities are still two and a half times as likely to be without a job as their able-bodied peers (NDA, 2005).
- There was a 62 per cent reduction in long-term unemployment between 1997 and 2004 while disability payments rose by 42 per cent over the same period (OECD, 2008).
- Spending on illness/disability benefits for those of working age increased by 500 per cent between 1988 and 2007 (OECD, 2008). See Table 2.1.
- Over 14m working days are lost in Ireland each year at an annual cost of 1.5 billion euros (IBEC, 2004).
- Musculoskeletal Disorders (MSDs) account for 50 per cent of illness among employed persons in Ireland (QNHS, 2004).

This final point is significant because the popular view has been that 'stress' and other common mental health problems such as depression and anxiety have been the dominant health issues facing the Irish workforce (O'Shea and Kennelly, 2008). Mental health clearly is an important and growing issue, and up to 20 per cent of sickness absence from work can be attributed to it. However, the dominance of MSDs as Ireland's biggest workforce health problem warrants further investigation, especially if it threatens the speed of the economic recovery.

Table 2.1: Total expenditure on illness and disability payments by DSFA, 1988-2007

	Illness Benefit €0	OIB €0	Invalidity Pension €0	Blind Pension €0	Disability Allowance €0	TOTAL
1988	254,082	37,381	131,048		75,090	497,601
1989	230,773	39,875	139,366		79,455	489,469
1990	223,082	43,360	154,763		86,548	507,753
1991	219,646	46,867	170,146		100,591	537,250
1992	219,559	45,638	183,664		110,729	559,590
1993	212,034	46,521	199,732		120,046	578,333
1994	210,029	48,335	217,906		121,447	597,717
1995	212,672	51,518	234,052	10,793	137,012	646,047
1996	212,596	54,335	241,034	11,047	157,533	676,545
1997	228,439	60,605	253,023	11,133	192,822	746,022
1998	241,437	61,261	264,259	11,655	219,550	798,162
1999	263,702	63,138	279,576	11,760	245,160	863,336
2000	280,828	65,353	311,511	12,302	279,176	949,170
2001	329,897	70,496	354,459	13,156	332,308	1,100,316
2002	385,297	77,018	403,617	14,221	407,585	1,287,738
2003	433,455	78,757	440,263	14,816	463,608	1,430,899
2004	479,611	82,657	487,375	15,868	544,489	1,610,000
2005	540,245	88,057	548,285	16,661	630,728	1,823,976
2006	627,642	95,988	602,414	16,964	738,431	2,081,439
2007	755,321	104,331	618,051	15,031	901,131	2,393,865

Source: OECD, 2008

2.2 In the European Union 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. Chronic musculoskeletal pain (CMP) is estimated to affect 100 million people in Europe (Veale, Woolf and Carr, 2008), MSDs affect more than 40 million workers in the EU and account for about half of all work-related disorders in EU countries (European Trade Union Institute (ETUI), 2007), representing an estimated cost to society of between 2.6 and 3.8 per cent of gross national product (GNP). The European Working Conditions Survey (EWCS) published by the European Foundation (Parent-Thirion, Fernandez Macias, Hurley, and Vermeylen, 2005) has shown that 24.7 per cent of workers across the EU report experiencing backache

and 22.8 per cent muscular pain. Indeed, the European Commission estimates that MSDs account for 49.9 per cent of all absences from work lasting three days or longer and for 60 per cent of permanent work incapacity (EC, 2007). If the European, knowledge-based economy is to recover and compete against the US and the growing economies of Asia the health and productivity of the EU workforce must be a policy priority. This report looks at Ireland in this wider EU context and assesses where Ireland is doing well and where it has challenges to confront.

2.3 Objectives of the study

More specifically, this project has sought to address each of the following questions:

1. What is the impact of MSDs on employment and economic performance in Ireland? How is this likely to change in the context of future demographic, workforce and lifestyle changes?
2. What is the relationship between work and MSDs? What impact do biological, psychological and social factors, including workplace factors have on MSDs?
3. How well do employers, governmental bodies, GPs and occupational health professionals understand and deal with MSDs as they relate to the workplace? How well equipped is the health sector to provide early intervention, rehabilitation and other support for people with these conditions?
4. What early interventions can policy-makers and employers deliver to ensure that those with MSDs a) retain their jobs b) maximise their quality of working life and their contribution to society and c) maintain access to (and routes back into) employment?

In addressing the objectives outlined above, we have used the following approaches:

1. Desk research: Here we have drawn on existing published research from the medical, occupational health and health economics literature. This has enabled us to draw together the evidence on the nature, extent, impact and costs of MSDs to the Irish economy, to employers and to individuals. We have examined a range of MSDs to assess the extent to which their impact varies and where policy and practice has been both strong and weak in preventing and intervening.
2. Secondary data analysis: We have used data from domestic and European studies and surveys to examine the prevalence and costs of MSDs in the working age population in Ireland.
3. Expert interviews: We have conducted interviews with experts across a number of disciplines (including occupational health, labour economics, rheumatic disease, and back pain) to identify the main areas of policy and practice which need to be addressed by policy-makers, health professionals and by employers.

In addition to the wider picture, to focus the research, we have chosen to concentrate on four categories or groups of MSDs. These are:

- Back pain;
- Work-related upper-limb disorders (WRULDs);
- Rheumatoid arthritis (RA);
- Spondyloarthropathy (SpA).

Back pain and the majority of WRULDs are categorised as non-specific and episodic conditions which may frequently be caused by, or be made worse by, work. 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 people with these conditions, such as back pain, never seek treatment and most recover on their own but the conditions can cause significant absence from work or lost productivity. Back pain and WRULDs are often included in the occupational health and safety guidelines and literature. Occupational health practitioners typically deal with these conditions.

On the other hand, RA and SpA are specific and progressive rheumatic diseases which are not caused by work, but may be made worse by work, and are often handled by general practitioners and specialists not within the occupational health arena. They are clinically diagnosed conditions that progress in a broadly predictable way if untreated. They can have a significant impact on functional capacity at work and, in the long-term, participation in the labour market. Most people with these conditions require clinical interventions over a prolonged period of time and the management of these conditions for those of working age should involve the frequent and active participation of clinicians, employers and occupational health professionals.

Together, these MSDs illustrate the effects of conditions from which over 230,000 Irish workers may report at any one time. Improving our understanding of the effects of these conditions, how staying in work can be beneficial, and what might be done to alleviate their impact, can yield significant social and economic benefits.

2.4 In the absence of a consensus on a clinical definition of many MSDs, navigating the literature on their prevalence, incidence, diagnoses, epidemiology, treatment and cost to Irish society is a difficult task. 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 Scientific Group, 2003). Some clinicians differentiate between ‘musculoskeletal conditions’ and ‘musculoskeletal disorders’. The former refers to all clinical conditions affecting the musculoskeletal system

**A note
on definition**

and the latter, to borrow a definition from the European Trades Union Institute (ETUI, 2007), meaning ‘any affliction of the musculoskeletal system that appears at work and causes discomfort, difficulty or pain when performing work’.

In Ireland, the Department of Social and Family Affairs (DSFA) includes only the following MSDs on its register of occupational diseases:

- Bursae (elbow and knee);
- Cramps in the hand or forearm due to repetitive movements;
- Inflammation of the tendons of the hand or forearm;
- White finger;
- Paralysis of the ulnar nerve;
- Carpal tunnel syndrome;
- Lateral epicondylitis.

These conditions focus predominantly on upper limb disorders, while other EU countries more frequently include low back pain, inflammatory conditions and spinal conditions. This suggests that Ireland’s official definition of MSDs may be unhelpfully narrow if a comprehensive picture of MSD prevalence and impact is to be gained.

2.5 Structure of the report

This report is structured as follows:

- Section 3 examines the extent of MSDs in Ireland and the impact they have on productivity and attendance at work, on labour market participation and on the wider Irish economy.
- Section 4 reviews the range of interventions, including vocational rehabilitation which can improve job retention and labour market participation among those with MSDs.
- Section 5 sets out our recommendations for employers, employees, GPs, occupational health professionals and for the Irish government.
- Appendix 2 provides a benchmarking grid in which a number of indicators covering the labour market, the welfare system and the healthcare system are presented for each of the country involved in the Fit for Work project.

3. Work and MSDs in Ireland

This section sets out what we know about the impact of MSDs on people of working age in Ireland. It uses data, research and interview evidence from Irish sources where this is available, and paints a picture of the challenges faced by both current and future Irish workers, their families, their employers and, ultimately, state agencies. It looks at four main issues:

1. The inadequacy of the data on MSDs in Ireland and the consequences of this;
2. The impact that MSDs have on people's ability to work;
3. The impact that work can have on MSDs;
4. The wider economic and social impact of MSDs in Ireland.

We begin by looking at data quality.

3.1 An unclear picture

Although many have tried, it remains difficult to quantify precisely the extent of MSDs in the working age population of Ireland. The European Foundation for the Improvement of Living and Working Conditions (Eurofound) – ironically, based in Dublin – has repeatedly found it difficult to build a reliable statistical portrait of MSDs in Ireland. The French organisation, Eurogip, recently attempted to build up a statistical profile of MSDs in the EU, but found that Ireland (along with several other member states) had inadequate data (Eurogip, 2007). Even the Quarterly National Household Survey (QNHS) conducted by Irish Central Statistics Office has only patchy data about the prevalence of a narrow range of MSDs. This is a troubling picture for a number of reasons:

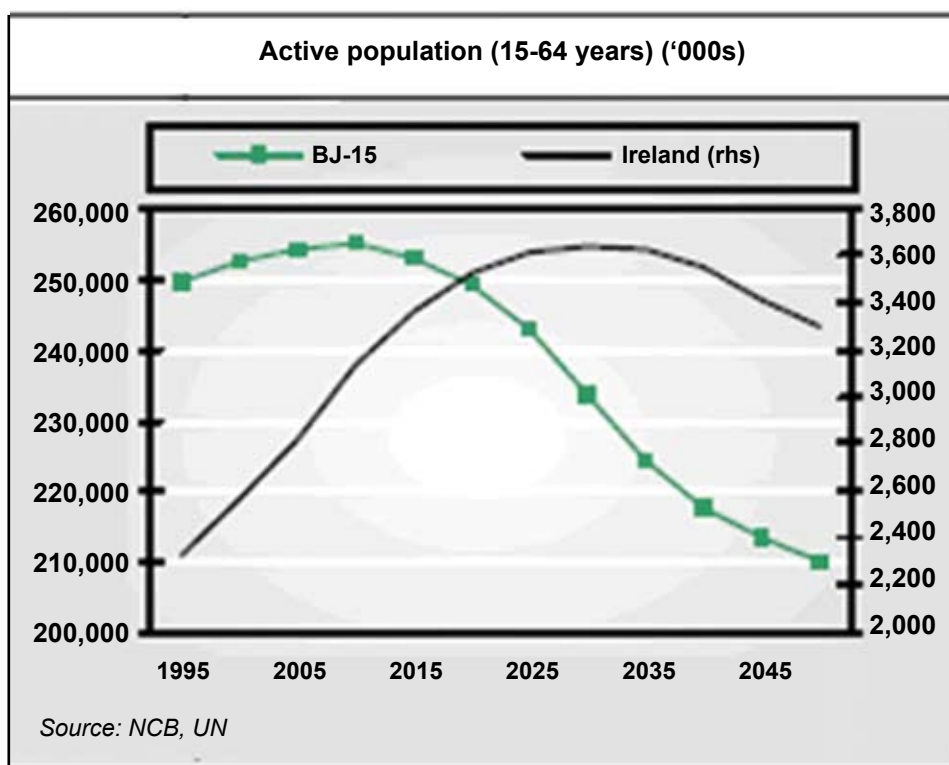
- It is impossible to be accurate about the economic consequences of MSDs, their productivity impact or their social costs to the nation, to its workers and to their families.
- If, as is likely, the prevalence of MSDs increases as the average age of the Irish workforce increases, the absence of good baseline data today makes forecasting the future impact of MSDs very difficult.
- Poor data make it difficult to make a compelling case for action to Irish employers or to Irish policy-makers.
- The benefits of clinical, labour market or workplace interventions are made all the more difficult to quantify (or justify) if there are no reliable or comprehensive data on the extent or impact of MSDs in the Irish workforce.

Despite this, The Work Foundation is confident that there is sufficient evidence in Ireland to argue strongly for MSDs to be a policy priority in the coming years.

What we do know is that, compared with other EU member states, a relatively low proportion of the Irish workforce currently reports having regular backache or muscular pain (European

Foundation for the Improvement of Living and Working Conditions, 2007). This can, in large measure, be attributed to the fact that Ireland has the youngest age distribution in Europe. However, as Figure 3.1 illustrates, the Irish workforce is ageing and, with it, the risk of increasing MSD prevalence over the next 20 or 30 years.

Figure 3.1: Working age population in Ireland to 2045



Source: O'Brien and King (2006)

Experience from economies with older age distributions shows that the burden of MSDs can have significant economic and social consequences. Ireland 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).

3.2
The impact of
MSDs on ability
to work

The impact of MSDs on individuals and their ability to work varies significantly from person to person. Attempts to measure relative work disability differ according to methods of data collection, respondent selection and definitions of work disability. Work disability usually refers to cessation of employment, reduced working hours or claiming of disability benefits. These estimates rarely include estimations of lost productivity whilst at work.

MSDs can cause work-limiting pain and fatigue which many people feel unable to disclose. One Irish 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 RA are reluctant to disclose their condition to their colleagues and managers out of a fear of discrimination (Gignac, Cao, Lacaille, Anis, and Badley, 2008).

MSDs, as outlined in Section 2, can be non-specific or specific. The effects of specific MSDs are discussed below with particular reference to RA and SpA. Other, largely non-specific MSDs are described in relation to two main categories, back pain and work related upper limb disorders. The effects of pain from MSDs can thus impact on the following aspects of one's performance at work:

- Stamina and resilience;
- Cognitive capacity or concentration;
- Rationality/mood;
- Fatigue;
- Mobility;
- Agility.

An MSD can also have effects on safety aspects of work. If concentration or movement is affected by the condition or associated pain then some aspects of work may become unsafe. It must also be noted that, following diagnosis, some treatments can have significant side effects which affect an individual's ability to perform. Where particular hazards such as heavy machinery or driving are involved then safety aspects of job performance will also be of concern.

3.2.1 Work-related upper limb disorders

Just under 14 per cent of Irish workers report that they have experienced muscular pain in their neck, shoulders and upper limbs (European Working Conditions Survey (EWCS), 2007). Work-related neck and upper limb disorders (WRULDs) are MSDs affecting the upper part of the body caused or aggravated by work and the working environment. However, there is considerable debate about the definition and diagnostic criteria for WRULDs, which are also commonly referred to as 'sprains or strains', 'repetitive strain injuries or disorders', or 'cumulative trauma disorders'. Both specific and non-specific disorders and symptoms can be covered by this category. Van Eerd et al. (2003) identified 27 different classification systems for work related

MSDs, of which no two were found to be alike. The fact that a single disorder is often described in different ways only amplifies the problem. Critically, Van Eerd et al. (2003) found that the different classification systems did not agree on which disorders should be included. This definitional problem makes it difficult to calculate the number of people with WRULDs and to develop a common understanding of the associated risk factors.

Whilst no agreed classification 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. WRULDs can be specific and non-specific conditions (Aptel, Aublet-Cuvelier and Cnockaert, 2002) and attempts at classification tend to focus either on the affected body area or on the cause. Examples of WRULDs by body part include the following:

- Elbow: Epicondylitis (tennis or golfer's elbow);
- Hand, wrist and forearm: Carpal tunnel syndrome; repetitive strain injury (RSI), de Quervain's syndrome;
- Shoulder: Tendinitis of the shoulder;
- Neck: Neck pain.

Classification by occupational causes refers to actions such as vibration of the hand and arm, which can result in Raynaud's Syndrome, for example. The breadth of the category of WRULDs means that almost all symptoms and impacts on work associated with MSDs are associated with WRULDs. Specific symptoms and impacts of MSDs are therefore discussed in more detail below with reference to back pain, RA, and SpA conditions.

3.2.2 Back pain

Back pain is a very common complaint in Ireland, though good data on prevalence is not collected systematically. The 2003 Annual Report of the Health and Safety Authority (HSA, 2004) estimates that 26 per cent of all non-fatal injuries at work are attributable to back pain (32 per cent in the health and social care sector – illustrating some sectoral and occupational differences). The 2005 EWCS shows that 14.5 per cent of Irish workers report work-related back pain. In the vast majority of patients with back pain no specific diagnosis is given.

Back pain is common, episodic, often recurrent and generally self-limiting. It is defined as recurrent if several episodes occur in one year for a duration of less than six months, acute if an episode lasts for less than six weeks, sub-acute (7-12 weeks) and chronic if it endures for over 12 weeks. Back pain is a recurrent problem for many people, although this does not necessitate that symptoms will worsen. For the majority of people pain will disappear of its own accord

within four to six weeks. In a European study of people visiting their family doctors because of back pain, 65 per cent were free of symptoms within 12 weeks (van der Hoogen et al., 1998 in Bekkering et al., 2003). Recorded absence is greatest amongst the minority of individuals whose condition is chronic or recurrent. 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 seven 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 one month (Bekkering et al., 2003).

It is important to recognise that there is a difference between having symptoms, care seeking, lost productivity and disability, and the factors that contribute to them (Burton, 2005). This means that whilst an individual may experience musculoskeletal pain (in their back, for example), it is not possible to predict their strategies for dealing with illness or injury (seeking medical attention for example), how it will affect their work performance, whether they will take time off work and whether, ultimately, they will become one of the very small minority who become permanently disabled by their condition. The important question is therefore why, when so many people experience back pain, does it have such an adverse effect on some and not others? There is a growing consensus that psychological factors are the differentiating element as they are strongly associated with the progression of back pain from an acute to a chronic condition that affects two to seven per cent of people (Burton, 2005), and to disability (Burton, 2005; Bekkering et al., 2003).

3.2.3 Rheumatoid arthritis

Over 30 per cent of GP visits in Ireland are related to arthritis. Rheumatoid arthritis (RA) is an example of a specific MSD. It is a form of inflammatory arthritis with a prevalence of between 0.3 per cent and one per cent in most industrialised countries (WHO Scientific Group, 2003). Data on the prevalence of rheumatoid arthritis derive largely from studies performed in the USA and Europe. One recent estimate is that there are 28,000 people with RA in Ireland (Lundkvist, Kastäng and Kobelt, 2008) while Arthritis Ireland puts this figure at 40,000, 70 per cent of whom are women (Arthritis Ireland, 2006). The disease affects people of any age, although peak incidence is in the mid age range of the working age population, between the ages of 25 and 55 years. Epidemiological studies have shown that RA shortens life expectancy by around 6-10 years.

The exact cause of RA is unknown. Evidence suggests that it is an immune reaction, presenting as an inflammation affecting joints and other tissues. Risk factors include gender, family history of RA and specific leukocyte antigen (HLA) (WHO Scientific Group, 2003). Whilst at an individual level 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, weight loss

and fever or flu-like symptoms. 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.

The course of RA varies, meaning that it can go from a mild and even self-limiting form of the disease, to being severe and destructive within a short time (Young et al., 2000). RA is usually chronic (persistent) and people with the condition often have 'flares' of intense pain usually associated with fatigue, although the reason for these is not known. In effect, 'flares' mean that one day someone will be able to perform their duties and the next they cannot. This can be difficult for colleagues and managers to comprehend, and can make planning workloads challenging. Managing these 'flares' in employment requires close communication and understanding between employees and employers.

The effects of the disease can therefore make it difficult to complete every day tasks, often forcing many people to give up work. Work capacity is affected in most individuals within five years (WHO Scientific Group, 2003). One review of work productivity loss due to RA estimated that work loss was experienced by 36-85 per cent of people with RA 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 five 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 personal factors, giving an estimate of 40 per cent of those with RA withdrawing from the workforce because of their condition. It appears that, compared to other developed western economies, a higher proportion of people of working age with RA remain employed in Ireland while, by the same token, a higher proportion leave work because of their condition. In a recent 21-country study (Sokka et al., 2008) 36 per cent of people with RA were still working while 31 per cent were 'work disabled' because of RA. In Ireland, the figures were 40 per cent and 41 per cent, respectively.

Patient surveys conducted by Arthritis Ireland provide 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 and other forms of arthritis was estimated at 1.6 billion euros (Arthritis Ireland, 2008). In a second survey – this time including 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. Almost half of respondents 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.

3.2.4 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).

Recent research on the prevalence of SpAs across the European population concludes that the frequency has long been underestimated and may have a similar occurrence 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. Its 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 (Dagfinrud, Mengshoel, Hagen, Loge and Kvien, 2004). The Ankylosing Spondylitis Association of Ireland (ASAI) estimates that 44,000 people have AS in Ireland (ASAI, 2008). No further recent sources of data on the prevalence of AS in Ireland were found. First diagnosis is often made when people are in their teens and early twenties (the mean age of onset is 26). Research suggests that there is a strong genetic component to the cause of AS. Although anyone can get AS, it affects men, women and children in slightly different ways (Dagfinrud et al., 2004). In men, the pelvis and spine are more commonly affected, as well as the chest wall, hips, shoulders and feet. Women are supposed to have a later age of onset, milder disease course, longer asymptomatic periods but more extraspinous involvement. Accurate diagnosis can often be delayed – some research suggests an average of seven years before disease onset and diagnosis (Sieper, Braun, Rudwaleit, Boonen and Zink, 2002) – as the early symptoms are frequently mistaken for sports injuries. In women, it commonly affects the pelvis, hips, knees, wrists and ankles. The spine is generally less severely affected in women. Typical AS symptoms include pain (particularly in the early morning); weight loss, particularly in the early stages; fatigue; fever and night sweats and improvement after exercise. Again, as with RA, the temporal aspects of the disease require good management to ensure that individuals can perform their job but do not make work impossible.

As with most MSDs, particularly specific MSDs, the effects of AS vary greatly from individual to individual and from men to women (Dagfinrud et al., 2004). Approximately half are severely affected whilst others report very few symptoms; women are supposed to have a later age of onset, milder disease course, longer asymptomatic periods but more extraspinal involvement. AS is generally considered to be a disease in which many individuals can 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 physical health related quality of life of people with RA (Chorus, Miedema, Boonen and van der Linden, 2003) and AS was positively influenced by work (Chorus et al., 2003; Gordeev, Maksymowych, Evers, Ament, Schachna and Boonen, 2009). Chorus et al.'s conclusion was that work '*might be an important factor in positively influencing patients' perception of their physical performance*'. This finding concurs with Waddell and Burton (2006a) that, overall, good quality work has health and recuperative benefits for workers. The extent to which the workplace can have a positive or negative effect on development of MSDs is discussed below.

Psoriatic arthritis (PsA) is a form of joint inflammation affecting between 0.2 and 1 per cent of the general population (Wallenius et al., 2008) and between 10 and 20 per cent of individuals with psoriasis. No Irish data on PsA were found. When joints are inflamed they become tender, swollen and painful on movement. The joints are typically stiff after resting, early in the morning or while resting in the evening. Tissues such as ligaments, 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. Men and women are considered to be equally affected, and comparative studies have showed that patients with PsA have a burden of illness which is comparable to that of patients with rheumatoid arthritis (RA) or ankylosing spondylitis (AS) (Wallenius et al., 2008). 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 pattern is involvement of the joints of the spine and sacroiliac joints which is called spondylitis (similar to ankylosing spondylitis). 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. Importantly the absence of rheumatoid factor in the blood helps distinguish PsA from RA. It is usual for the condition to develop in the teenage years. In women there may be an increased incidence following pregnancy or the menopause. As PsA affects both the skin and the joints, this has a negative impact on the quality of life of people with

PsA; due to emotional problems, in fact, they may experience more pain and role limitations than patients with RA (Husted, Gladman, Farewell and Cook, 2001). A higher level of mortality compared to the general population has also been reported among people with PsA (Wallenius et al., 2008).

3.3
The impact
of the
workplace
on MSDs

The risk factors for MSDs are wide ranging. Whilst there is broad consensus among experts that work is 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). 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.

One area of concern in Ireland is the growth of obesity – a risk factor for bone and joint conditions (as well as cardio-vascular disease and diabetes). The latest data suggests that Ireland has the fourth highest prevalence of overweight and obese men in the EU (it ranks seventh for women), (Irish Heart Foundation). In addition, there are 300,000 Irish children who are clinically obese, and their numbers increase by 10,000 each year. Table 3.3 summarises the intrinsic risk factors for non-specific MSDs.

Table 3.3: Summary of intrinsic risk factors for non-specific MSDs

Intrinsic factors
<ul style="list-style-type: none"> • 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 assessments of workplace risk to reduce the incidence of these conditions is well established.

It is clear that work is not the cause of rheumatic diseases such as RA and SIA, though 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 Tempel and van der Linden, 2001; Gignac et al., 2004).

The link between some non-specific MSDs, such as low back pain, and work is well evidenced, and some job demands that are frequently cited as risk factors for MSDs 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 et al., 2004).

MSDs affect employees in all kinds of industries and occupations, although some are more high risk than others, and certain occupations are associated with strain on specific parts of the musculoskeletal system.

Many jobs involve activities that can constitute a risk factor for MSDs. According to the EWCS, 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 et al., 2005).

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, 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.

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 of an individual leaving work prematurely. Research on low back pain shows that an employee's belief that work itself produces pain precedes sickness behaviour, and is a risk factor for chronic work disability (Werner, Lærum, Wormgoor, Lindh and Indhal, 2007). 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 someone with RA leaving work early. The evidence from Sokka and Pincus (2001) 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. We must also consider the psychosocial and organisational factors of work.

Psychosocial and organisational factors associated with MSDs include:

- Rapid work pace or intensified workload;
- Perceived monotonous work;
- Low job satisfaction;
- Low decision latitude/ low job control;
- Low social support;
- Job stress.

Job stress is a broad term and can result from a variety of sources such as high job demands or a mismatch between skills and job requirements. In addition stress can result from abuse or violence at work.

Again, it is important to recognise the connection between the psychological and the physical. While job stress, including violence and discrimination at work, might lead to lost productivity due to stress or common mental health problems, 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).

3.4 The wider economic and social impact of MSDs

The effect that MSDs can have on an individuals' ability to work and the time they may require to be absent from work means that MSDs have significant associated costs to the individual, their family, the employer and the wider economy. Calculating the exact costs is not straightforward (Lundkvist et al., 2008). Several factors need to be considered, and obtaining accurate, reliable and consistent figures is almost impossible. However, existing figures on the economic impact of MSDs based on conservative approximations show that MSDs are a significant economic burden to Ireland.

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. They are often further separated into medical costs occurring in the healthcare sector and non-medical costs occurring in other sectors (Lundkvist et al., 2008).
- **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 and lost tax revenue.
- **Intangible costs** including psychosocial burden resulting in reduced quality of life, such as job stress, economic stress, family stress and suffering (WHO Scientific Group, 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 the costs. Some factors which affect the calculations include the following:

- Severity of patient's conditions;
- Mix of patient demographics in a study;
- Calculation method for productivity;
- Definitions of work disability;
- The treatment costs or outcomes due to treatments (the year costs were calculated is also a factor not least because treatment processes can change);
- Change in healthcare financing systems;
- Incidence or prevalence based estimates of costs.

Intangible costs are rarely included in cost calculations as it is almost impossible to properly express the intangible costs in monetary terms (Sieper et al., 2002). However, the evaluation of intangible costs gives useful information regarding the price paid by people with MSDs in terms of quality of life (QoL), and QoL measures should be used as further indicators to measure the effectiveness of interventions (Leardini, Salaffi, Montanelli, Gerzeli & Canesi, 2002). Two measures now in more common use are:

- 1. Disability adjusted life years (DALYs).** This is 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 one year of healthy life lost. For example, rheumatoid arthritis accounted for 0.77 per cent of all DALYs lost in Ireland (Lundkvist et al. 2008).
- 2. Quality adjusted life years (QALYs).** The QALY is also a measure of disease burden, including both the quality and the quantity of life lived. It is used in assessing the value for money of medical interventions and is based on the number of years of life that would be added by these interventions. A QALY gives a measure of how many extra months or years of life of a reasonable quality a person might gain as a result of treatment and helps in the assessment of the cost-utility of this treatment.

Both measures are the subject of debate, but have become accepted as helpful in making comparative judgements across medical conditions and internationally.

3.4.1 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 (LBP), the most significant direct costs are related to physical therapy, inpatient services, pharmaceuticals, and primary care (Dagenais, Caro and Haldeman, 2008). Nachemson, Waddell and Norlund (2000) calculated that some 80 per cent of healthcare costs are generated by the 10 per cent of those with chronic back pain and disability. For RA, although direct healthcare costs have been relatively small in the past (Lundkvist et al., 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).

Direct costs, compared to indirect costs, usually represent a minority of the total costs (Dagenais et al., 2008; Kavanaugh, 2005; Kobelt, 2007; Lundkvist et al., 2008). However, for RA, large cross-countries variations of estimates of direct costs are found in the literature due to the different uptake of particular treatments in different countries (Lundkvist et al., 2008).

Table 3.4 shows some of the specific direct costs associated with musculoskeletal conditions in general, and rheumatoid arthritis and low back pain in particular as found in the literature (Woolf, 2004 as cited in The Bone and Joint Decade 2005; Kavanaugh, 2005; Dagenais et al., 2008).

Table 3.4 Direct costs associated with MSCs, RA, and low back pain

	MSCs	RA	Low back pain
Healthcare costs	Physician visits Outpatient surgery Emergency room Rehabilitation service utilisation (physiotherapist, occupational therapist, social worker) Medications Diagnostic / therapeutic procedures and tests Devices and aids Acute hospital facilities (with and without surgery) Non acute hospital facilities	Physician visits Other health professional visits Outpatient surgery Emergency room Medications (including administration costs) Imaging Laboratory monitoring Toxicity (diagnosis, treatment) Medical assist devices Hospitalisations (related to RA or its treatment): orthopaedic surgery, extended care / rehabilitation facilities	Physician visits Chiropractic visits Outpatient surgery Emergency room Physical therapy and rehabilitation service utilisation Complimentary and alternative medicine Medications Imaging
Personal costs	Transportation Patient time Carer time		
Other disease related costs	Home healthcare services Environmental adaptations Medical equipment Non-medical practitioner, alternative therapy		Mental health services

Source: Woolf, 2004 as cited in The Bone and Joint Decade 2005; Kavanaugh, 2005; Dagenais et al., 2008

Calculations of the costs of treatment tend to evaluate the clinical costs and benefits of treatments. The wider impact of 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 DSFA and other government departments. Taking a wider joined-up approach to an analysis of costs and benefits of treatments for illness in general and MSDs in particular may provide a different and perhaps more realistic assessment of the costs and benefits of treatments.

3.4.2 Indirect costs

There are two main types of indirect cost 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 and there are no Irish data on presenteeism costs, rather it is measured on a case by case basis in individual studies. 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. Employer surveys require HR professionals to complete the survey about their organisation from their records, though we found no recent Irish examples. Self-report surveys ask individual employees to complete the survey with respect to a particular reference time, for example, the previous two to four weeks (for example, the Quarterly National Household Survey). 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 (for example, employees do not always record absence accurately or categories for recording causes are not adequate). 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. Managers, for instance, tend to underreport their own absence.

The only recent Irish analysis which exists was conducted by an economic consultancy (Indecon, 2006) which was commissioned to evaluate the impact of health and safety legislation in Ireland. Also commenting on the poor quality of data available from official sources, they estimated that the total annual cost of work-related accidents and ill-health was likely to be close to 3.6 billion euros. Within this they estimated that 1.8 billion euros was accounted for by lost output caused by temporary and permanent absence from work. Another study by the

Irish Business and Employers Confederation (IBEC, 2004) estimated that absence from work in Ireland's smaller employers (they employ approximately 840,000 people) was costing the Irish economy 692 million euros each year.

Not only are indirect costs associated with sickness absence and presenteeism, but indirect costs are also associated with early retirement among people with MSDs (Dagenais et al., 2008; Alavinia and Burdorf, 2008). In the literature, high variation is found about early retirement rates depending on the country, the year of the study and the sample included. However, in most studies it varies between 30 and 50 per cent (Lundkvist et al., 2008).

However, these 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). 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. As discussed in the previous section, the indirect costs of ill health extend beyond lost productivity of the individual, often impacting on the labour participation of family members (Pugner, Scott, Holmes, and Hieke, 2000). A further extension from work-related indirect costs, are additional costs associated with hiring household help (Kavanaugh, 2005) and provision of informal care. Although informal care is difficult to identify, quantify and value (what is considered 'informal care' by some people may be considered 'normal' by others), Lundkvist et al. (2008), estimated that for RA the annual cost of informal care in Europe is equal to 2,562 euro per patient. This figure varies greatly according to the services provided by the healthcare or social systems and the characteristics of the labour market in each country.

3.4.3 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 healthcare system (Cooper, 2000). The cost of AS to society is less well established (Chorus et al., 2002). More research has been done on cost in the US, Canada and other European countries, particularly the Netherlands, France and Belgium, than in Ireland. However, 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).

Lundkvist et al. (2008) estimated that the total cost of treating RA patients in Ireland was 19,596 euros per patient per year, or 544 million euros. These costs included medical costs, drug costs, non-medical costs, the costs of informal care and other indirect costs, but do not differentiate between those of working age and those above retirement age. These figures are slightly higher, per patient, than those for other western European countries.

The limitations of data collection outlined above highlight some of the difficulties encountered in trying to cost the impact of MSDs for employers and society.

3.5 Summary

In this section we have considered the impact that MSDs have on a person's ability to work, both physically, as a result of the condition itself, and from the associated effects, such as loss of concentration from pain. We have also discussed the impact that the workplace can have on MSDs, both at onset and during the development of the conditions. 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 in order to minimise their impact, such as vibrations and workstation ergonomics. However, the impact of other workplace risk factors, such as job quality, are not as widely understood.

In order to address the productivity gap, to have a productive workforce across the entire range of the working age population (which covers an increasingly large age bracket) government and employers need to work together to ensure that people are fit to work. To achieve this it is important that all those involved – employers, clinicians, the government and employees – recognise that the physical, psychological and social factors associated with work have a significant impact upon an individual's fitness for work.

We have also highlighted that it is 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, 2006b). Evidence suggests that work can help ameliorate the deterioration of conditions (Breen, Langworthy and Bagust 2005) and assist recovery from MSDs, where appropriate (Feuerstein, Shaw, Lincoln, Miller and Wood, 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.

The next section discusses the role that early interventions can play to help people with MSDs remain in work and return to work quickly.

4. Interventions

The impact of MSDs, as we have seen, can be significant; to the people living with them, to employers and to society as a whole. Their impact on the workforce has recently started to receive greater recognition. Whilst it is widely acknowledged that early intervention is an essential part of addressing the onset of MSDs and absence caused by these conditions, there is still some way to go before people living with MSDs are given the best support possible to remain in work or return to work. Long waiting times for care, certain employer's lack of capacity to deal with sickness, lack of employee awareness about conditions and their management, and mixed messages on the effectiveness of various methods of workplace interventions or return to work programmes are all barriers to making good and healthy work a reality for those living with MSDs.

This section looks at the kinds of interventions which are most likely to help workers with MSDs to stay in work, to return to work, to remain productive, to derive health benefits from work and to continue to make a contribution to society. In addition, Appendix 2 provides a wide number of indicators that may help to identify both enablers and barriers to early intervention in Ireland, and to compare Ireland to countries with similar or different labour market, welfare and healthcare systems

4.1 Ensuring that workers who have MSDs get access to the appropriate treatment and support as quickly as possible must be a top priority for employers and healthcare professionals.

The case for early intervention Epidemiological studies of employees whose absence is caused by low back pain have shown that 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). Sick leave has also been shown to have a negative psychological impact on employees (Meijer, Sluiter, and Frings-Dresen 2005). Early intervention is therefore crucial to individual recovery and self-management, and may contribute to reducing the number of working days lost and reduced productivity caused by MSDs (although the evidence on the cost-effectiveness of specific return to work programmes is inconclusive).

In Ireland the DSFA has funded a project to assess whether early interventions with benefit claimants with low back pain can help to support early return to work and to halt the progression to chronic disability. The Renaissance Project, as it was called, is described briefly below.

Box 1: Early intervention 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%), those with nerve root pain (3-5%) and those with a potentially serious spinal pathology (1-2% 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 which progressed to a long duration and a saving of over 560,000 euros 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.

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

It is also 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 through absence. Based on a review of the available evidence Breen et al. (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 healthcare professional and, following referral or diagnosis, advice and planned action, a review should be conducted within four weeks.

Job retention and return to work programmes are contingent on patients receiving appropriate medical care as quickly as possible. Yet the length of time that it takes to be seen by a medical professional is a complaint that is heard frequently from individuals and employers. Moreover, since GPs are the first point of call for most people with MSDs and the signatory of sick notes, they have a vital role to play in ensuring that patients are able to manage their conditions, and are pivotal in either obstructing or facilitating an individual's return to work.

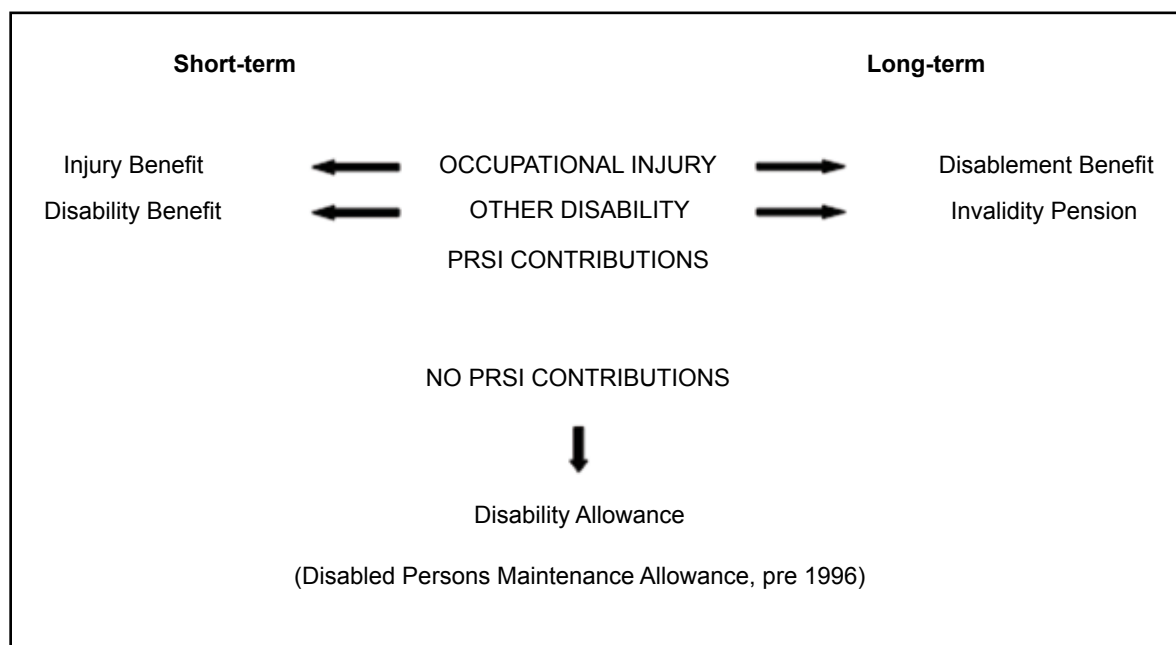
In Ireland we were given examples of very long waiting times (up to 4 years in some cases) for some workers with rheumatic diseases. In large measure, these seem to be due to a shortage of consultant rheumatologists which meant that, even in cases where GPs had made an initial and sometimes early diagnosis, their patients were having to wait several months or even years for a consultant appointment. Clearly, disease progression during this time can still occur and, in some cases, affect the work disability and psychological well-being of the patient.

4.2 It is clear that, in most EU member states, interventions made by the social security system can make a significant difference to citizens of working age with long-term, chronic or work-disabling conditions. Ireland provides a number of benefits for people with chronic conditions and disabilities through the Department of Social and Family Affairs (DSFA). Eligibility for benefits is based on a mandatory pay-related social insurance (PRSI) scheme. In recent years, DSFA provision has evolved from focusing on providing income support to reducing the risk of dependence and encouraging greater participation in the workforce, where possible. The basic structure of payments is set out in Figure 4.1 on the next page.

The social security regime for the work disabled

Specific to funding, the DSFA provides a number of different schemes for people who are sick, disabled, or injured from work: these include Illness Benefit, Invalidity Pension, Disability Allowance, Blind Person's Pension and Occupational Injury Benefit.

Disability Allowance is administered to working age people who are unable to work due to a specific chronic condition or disability. In June 2006, the DSFA changed its policy for income disregard for Disability Allowance to encourage people to seek employment. The change allows for a gradual reduction of social welfare benefits as earnings increase. For individuals who

Figure 4.1: Description of disability payments in Ireland

Source: Gannon, 2006

earn between €120 and €350, the Disability Allowance tapers at a rate of 50 cents for every euro earned. In 2008, this meant that someone could earn up to €432.50 per week before their Disability Allowance fully ceased. The aim is to remove financial disincentives to a return to work.

In addition to benefits provided to people with disabilities, Ireland offers a Carer's Benefit and a Carer's Allowance for people who need to leave full time work in order to care for someone in need of full-time care or attention.

In terms of encouraging employment for people with disabilities, Ireland offers a Wage Subsidy Scheme, an Employee Retention Grant, Workplace Equipment Adaptation Grant, Disability Awareness Training Support Scheme, and a Supported Employment Programme.

The Wage Subsidy Scheme offers employers wage subsidies for employee's with disabilities who are limited in their productivity. The Employee Retention Grant Scheme offers employers funding to assist with making adjustments to the workplace for an employee who develops a disability, regardless of whether the disability is work-related. The DSFA recently received approval from the European Social Fund to initiate the 'Human Capital Investment Operational Programme, 2007 – 2013'. One of the objectives is to develop a programme that will provide

comprehensive employment strategy focusing on the individual case management of people on disability welfare payments to increase their rate of employment.

4.3 For those with specific musculoskeletal conditions, speedy referral to the appropriate specialist for investigation and treatment is usually vital. Those with MSDs can experience numerous problems associated with long term care, including long waits, failure to undertake a multidisciplinary approach, poor advice on pain management, and a lack of clear integrated pathways. Notwithstanding this, there are a number of condition-specific interventions which have been shown to be effective in improving job retention and return to work.

4.3.1 Rheumatoid arthritis

The importance of effective and early treatment of RA in reducing joint damage and disability is now widely acknowledged (Pugner et al., 2000). Since there is currently no 'cure' for RA, the focus of treatment is on controlling signs and symptoms, enabling the patient to manage their condition and improving quality of life. Medical treatments for RA are directed at suppressing one or other part of the joint damaging processes, the effectiveness of which has improved in recent years. Since it is well documented that the functional capabilities of RA patients will decline over time, it is critical that patients should be treated as quickly as possible with disease-modifying anti-rheumatic drugs (DMARDs) to control symptoms and disease progression (Scottish Intercollegiate Guidelines Network (SIGN), 2000). One study found that there is a 73 per cent risk of erosive damage in patients who wait over a year between symptom onset and referral to rheumatology clinics (Irvine, 1999 in Luqmani et al., 2006).

Clinical evidence is also growing which demonstrates that anti-TNF drug therapies can have a more powerful effect on RA than DMARDs, especially in improving job retention and work participation (Halpern, Cifaldi, and Kvien, 2008). It seems that, in Ireland, people with RA who can benefit from anti-TNF drug therapies have been able to gain ready access to them once they get to see a consultant. However, some clinicians interviewed for this study were concerned that this access may be reduced during the economic downturn, with serious clinical and labour market consequences. It was also suggested that better local access to services would reduce travel time and temporary absence from work, as well as reducing reliance on large institutions for the delivery of treatments.

However, medical interventions in the form of drug therapy to control inflammation and disease progression, and surgery to redress structural damage are only part of managing the care of RA patients. Other important elements include patient education and empowerment, practical self-management to help deal with symptoms and specialist support to help live with the disease and its consequences. The effective management of RA has to involve not only the clinical

team (including GPs, consultant rheumatologists, physiotherapists, occupational therapists, chiropractors, podiatrists, pharmacists, primary care nurses and orthopaedic surgeons), but the participation of the patient and, ideally, their employers. Social workers also have their role to play.

4.3.2 Spondyloarthropathies

Prompt referral to specialists for confirmation of diagnosis and the start of treatment is also essential for those with AS and other rheumatic conditions. Since (similarly to RA) there is no cure for AS, the aim of therapeutic intervention is to reduce inflammation, control pain and stiffness, alleviate systemic symptoms such as fatigue, and to slow or stop the long-term progression of the disease. The prescription of non-steroidal anti-inflammatory drugs (NSAIDs) or anti-TNF drugs coupled with regular physiotherapy forms the current basis for the treatment of AS.

As AS typically affects relatively young people, its potential to disrupt or even curtail an individual's labour market participation may be significant. As we have discussed, there are important clinical, social and economic benefits to keeping these patients in work as long and consistently as possible. Depending on the severity of their condition, AS patients can benefit from workplace adjustments, flexible working arrangements, exercise regimes and physiotherapy (Boonen et al., 2001).

4.3.3 Non-specific MSDs

The primary focus of this report has been to examine the interventions and other factors which affect job retention, labour market participation and job quality among those with MSDs. As we have seen, there is evidence that physical impairment can represent a barrier to each of these aspects, but that many people – even those with serious and chronic incapacity – can and do lead full and fulfilling working lives. Since back pain and the majority of work-related upper limb disorders are not diseases to be cured, and there is very 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.

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. The limitations imposed by sick notes, statutory sick leave and formalised return to work programmes may serve to reinforce the 'illness' of the patient and

can tie employers hands. Based on evidence that psychosocial factors are a determinant of chronicity and disability in those with back pain, there is a strong argument for re-conceptualising this condition and its treatment, which has important lessons for other types on non-specific musculoskeletal pain (Burton, 2005).

Waddell and Burton (2006b) summarise the challenge neatly in their work on vocational rehabilitation. They point out that, whilst many non-specific MSDs do not have clearly defined clinical features and have a high prevalence among the working age population, most episodes resolve themselves and most people with these conditions remain at work or return to work very quickly. In their view, a focus on incapacity alone can be unhelpful:

*‘..the question is not what makes some people develop long-term incapacity, but **why do some people with common health problems not recover as expected?** It is now widely accepted that biopsychosocial factors contribute to the development and maintenance of chronic pain and disability. Crucially, they may also act as obstacles to recovery and return to work. The logic of rehabilitation then shifts from dealing with residual impairment to **addressing the biopsychosocial obstacles that delay or prevent expected recovery.**’ (Waddell and Burton, 2006b, p.7) [bold in original text]*

The biopsychosocial model is an explanatory framework that recognises the importance of psychological and social factors in determining how those with MSDs cope with their conditions. The following section provides a brief overview of the biopsychosocial model and outlines the implications that it has for the workforce.

4.4 The biopsychosocial model advocates that clinicians, occupational health professionals and others should assess the interplay between the biological (eg disease, joint damage), the

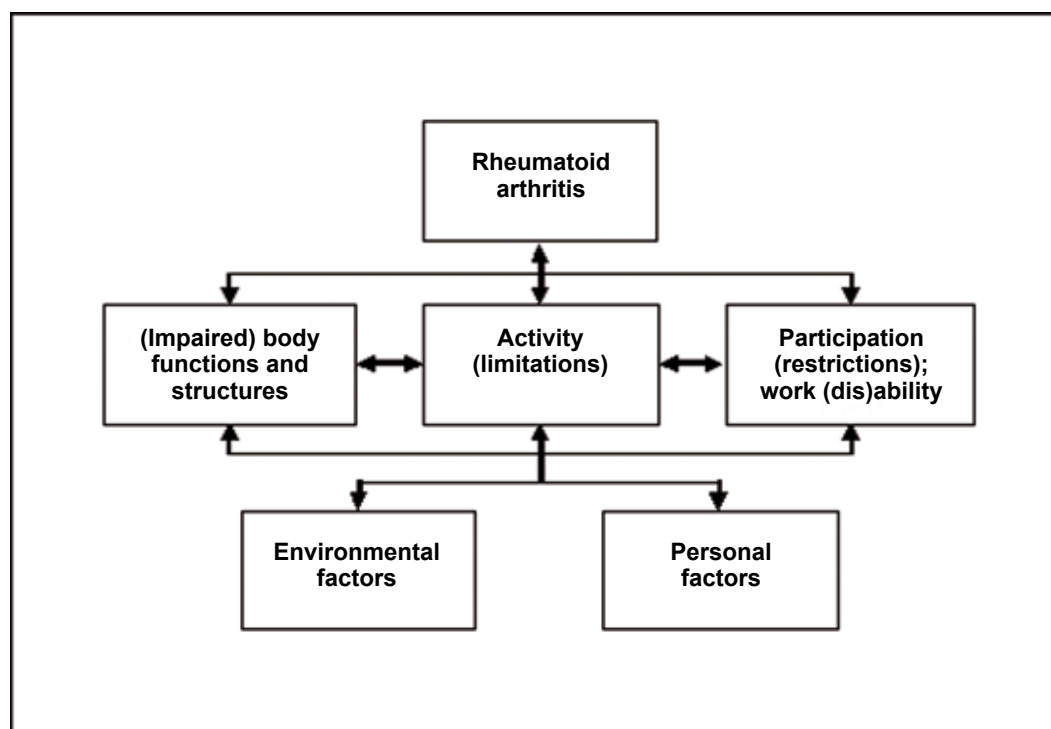
**The
biopsychosocial
model and work**

psychological (eg disposition, anxiety) and the social (eg work demands, family support). Clearly, the psychological disposition and behaviour of a patient can have a significant impact on the way a physical ‘injury’ (such as back pain) is approached by a patient. In some cases the patient risks entering a self-reinforcing cycle of incapacity, delayed recovery and even depression if their dominant response to pain is to ‘catastrophise’ it. Of course there may be many factors which affect an individual’s disposition to ‘catastrophise’, including personality, previous medical history, levels of family support or job satisfaction (Sullivan and D’Eon, 1990). It is evident that the interaction of the biological, psychological and social dimensions can have a significant impact on the development, progression of, and rehabilitation from, a musculoskeletal condition.

Since it was first proposed in the late 1970s, a growing body of evidence has developed to support the biopsychosocial model. For example, research has demonstrated that job dissatisfaction can be an important predictor of speedy and successful return to work (Bigos, Battie, and Spengler, 1992). On the issue of social support, studies have shown that limitations in functioning attributable to MSDs can stress family systems and lead to family conflicts if the patient is unable to perform normal family duties (Hamberg, Johansson, Lindgren, and Westman, 1997; MacGregor, Brandes, Eikermann, and Giammarco, 2004; Kemler and Furnel, 2002). On the other hand, an overly solicitous family (or, by extension, manager or colleague) may reinforce MSD patient passivity and encourage the patient to adopt a 'disabled' role (Kerns, Haythornthwaite, Southwick, and Gille, 1990; Block, Kremer, and Gaylor, 1980).

De Croon et al. (2004) looked at the research on work disability among people with RA and concluded that psychosocial factors were often a better predictor of work disability than standard bio-medical factors. In Figure 4.2, below, the authors highlight how wider environmental and personal factors enhance the explanatory power of the *International Classification of Functioning, Disability and Health (ICF)* in the case of work disability and RA.

Figure 4.2 ICF Model applied to work disability in RA



Source: de Croon et al., 2004

Some critics of the biopsychosocial model (McLaren, 2006) have focused on this last point, highlighting concerns that this approach may encourage or 'permit' helplessness in some patients or that, in other circumstances, it may alienate patients who feel that they are being told that their condition is 'all in the mind'. Clearly care must be taken in the way that clinicians and others mitigate these risks, but the balance of the literature – and of the expert opinion offered during the course of our interviews – is strongly in support of the biopsychosocial model and its role in informing the management of MSDs in both clinical and occupational settings (Smyth, Stone, Hurewitz and Kaell, 1999; Carter, McNeil, and Vowles, 2002; Zampolini, Bernardinello, and Tesio, 2007). Indeed, it forms the basis of the World Health Organisation's International Classification of Functioning, Disability and Health (ICF) which has been widely embraced as an authoritative guide for vocational rehabilitation (WHO, 2001).

As Waddell and Burton (2006b) 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. This suggests that employers contribute to the 'social' part of the biopsychosocial model and that their actions can make a difference to the outcome for individuals with MSDs.

4.5 4.5.1 Awareness of conditions and their management

The role of employers

Many employers remain unaware of the nature of MSDs, both in terms of the immediate impact on functional capacity at work and, where relevant, the manifestations and progression of the conditions. For example, employees with RA or SpA may be susceptible to periodic 'flares' of inflammation and severe pain followed by fatigue and possible depressed mood. Unless employers are aware that these symptoms are expected or 'typical', they can adopt an unhelpful or over-cautious approach to return to work.

Whilst the message about manual handling and work design may have got through to many employers, the fact that absence and even reduced work requirements can be counter-productive 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 employers and society. However, it is not just employers that need to know more about MSDs and their treatment. One of the most persistent (and pernicious) myths about back pain, for example, is that bed rest is the best solution. Health promotion campaigns have been 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.

4.5.2 Intervention and adjustment of work demands

Not only has evidence shown that work is good for you but returning to modified work can help recovery (Feuerstein et al., 2003; van Duijn and Burdorf, 2008). Among occupational health specialists, the use of vocational rehabilitation has long been an accepted mechanism for ensuring that individuals with illness, injury or incapacity can return to work (even to perform adjusted work) as soon and as sustainably as possible. There have been concerns that rehabilitation is not well-integrated into mainstream clinical practice and that return to work is not seen by a sufficient proportion of clinicians as a valued outcome for the patient (Frank and Chamberlain, 2006). It is also important to stress that vocational rehabilitation is not the preserve of professionals. In practice effective management is as, if not more important than formal rehabilitation.

Yet employers, if they think about this at all, invariably consider the physical job demands which need to be met by an employee with an MSD. The biopsychosocial model requires that the mental demands of the work are also considered as part of the return to work process. There is a growing body of work which 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, Shaw, Nicholas and Huang, 2004; Chorus, Miedema, Wevers and van der Linden, 2001). The success with which both employee and employer can manage the process of re-adjustment during return to work can also depend on the beliefs that both parties have about the extent to which the work itself is (at least in part) caused by or related to the incapacity.

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. Evidence on the success of these interventions at tackling non-specific MSDs is mixed (Meijer et al., 2005).¹ A systematic review of multidisciplinary treatments of patients with low back pain, for example, demonstrated that whilst the treatment improved function and decreased pain in individuals, it could not be demonstrated that this was linked to employees returning to work earlier than those who had not received it (Guzman et al., 2001). Whilst biomechanical or ergonomic factors may be related to the onset of back pain, evidence that interventions based on these principals will prevent re-occurrence or progression to chronicity is thin on the ground (Burton, 1997). In fact, it has proved virtually impossible to determine whether one treatment is significantly more effective than another (Ekberg, 1995). Even for specific conditions such as RA, the evidence for

¹ Findings from an evaluation of the effectiveness of return-to-work treatment programmes were inconsistent

the effectiveness of vocational rehabilitation is slim (Backman, 2004; de Buck, Schoones, Allaire and Vliet Vlieland, 2004).²

There is nonetheless broad agreement on the principles for managing non-specific MSDs, particularly back pain, that are outlined in Box 2. This includes advice and a number of relatively simple measures for employees and employers to follow on how to deal with back pain.

Box 2: Principles of managing non-specific MSDs

- Early treatment should be sought for back pain.
- Most back pain is not due to a serious condition.
- Simple back pain should be treated with basic pain killers and mobilisation.
- It is important to keep active both to prevent and to treat back pain.
- Getting back to work quickly helps prevent chronic back pain.
- Adopt the correct posture while working.
- All workplace equipment should be adjustable.
- Take breaks from repetitive or prolonged tasks or postures.
- Avoid manual handling and use lifting equipment where possible.
- Clear information should be provided to employees about back care.
- Health and safety policies should be implemented to cover all aspects of day-to-day work and should be reviewed regularly.

Source: HSE (1999)

This requires employers to think beyond their statutory duty to address health and safety risks, and to recognise that sickness absence management, effective return to work programmes and rehabilitation are, at bottom, principles for effective management (Waddell and Burton, 2006b). Much is dependent on raising awareness about how to manage the symptoms of MSDs amongst employees and their managers, and ensuring that the latter have the skills and confidence to support employees in work.

4.5.3 Line managers

What is clear is that the role of line managers in early intervention is crucial, both in work retention and rehabilitation. Yet many line managers feel ill-equipped to manage long-term absence and incapacity. They may find aspects of mental ill-health or chronic incapacity awkward and embarrassing to talk about or confront, and are concerned about challenging or asking for more information about GP sick notes, making home visits or telephoning staff at home for fear of being accused of harassment or falling foul of the law and landing themselves and their organisation in a tribunal. They are also ignorant of, or uncomfortable with, the idea of

² Backman, 2004 found only six studies for the period 1980 to 2001

rehabilitation. Although the Employment Equality Act requires employers to make 'reasonable accommodation' to support employees with long-term illness or injury, most line managers find job re-design difficult, irritating and disruptive.

Given that MSDs are the most common work-related health problem, and the importance of psychosocial factors in determining whether an employee remains in work or returns to it as soon as they can, managers need to have the skills to deal with staff who have them, or the costs to their organisation may be significant, particularly for small and medium enterprises. Small employers also have issues with employees with MSDs, as their absence from work can have, potentially, more impact on customer service, productivity and business performance.

4.5.4 Improved employer-clinician dialogue

On the face of it, many of the return to work challenges faced by employees with MSDs may be improved if there was an improved level of mutual understanding between employers and clinicians. As highlighted above, the clinical appreciation of most MSDs by employers can be cursory to say the least. It is often argued that most GPs, in their turn, have little or no appreciation of the vocational or occupational dimension of many MSDs. Medical students in Ireland 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 GPs are making return to work judgements without a very clear view of the demands of the job, the extent to which adjustments to the job can be made or, indeed, whether swift and appropriate return to work might have positive psychological (and economic) benefits. Without this understanding of specific tasks undertaken by employees and the ability to adjust those tasks, GPs may feel that a return to work would exacerbate a condition unless an individual is 100 per cent fit.

For their part, employers will only very rarely challenge a GP's sick note, or ask for a second opinion on the potential for a beneficial return to work for a patient. The consequence of this mutual lack of understanding and resulting dearth of dialogue can often be that the MSD patient is left stranded in the middle, with no clear pathway back to work and, more importantly, no voice. A proactive, inclusive, multi-disciplinary, capability-focused approach to vocational rehabilitation, informed by the biopsychosocial model and delivered through case management is widely regarded as the most enlightened and effective approach to take in the majority of work-related MSD cases. Quite often both employers and GPs will focus on the aspects of the job which an MSD patient cannot currently perform, rather than on those which they can.

One of the attractions of the biopsychosocial model is that it 'joins up' the three core strands of the MSD patient's experience, and management of, their condition. It offers a comprehensive framework with which to look at the diagnosis and treatment of a range of MSDs, especially when an important outcome for the individual is to stay in, or to return swiftly to, work.

4.6 This section has outlined the case for early intervention, first and foremost to benefit the health of those with MSDs, but also to ensure that they remain productive members of the workforce. However, it also demonstrates that intervention should ideally begin before those experiencing musculoskeletal pain visit their GP, and extend beyond the signing of a sick note. The biopsychosocial model clearly illustrates the need for a more comprehensive understanding of the factors that contribute to the development of non-specific MSDs, taking into account individual or psychological factors as well as the social milieu in which individuals live their lives, in which work plays a large part. To achieve this, employers, employees and clinicians need to talk to one another more effectively. Whilst this is challenging, and undoubtedly not common practice today, the costs of not addressing this problem were highlighted in this chapter.

Summary

5. Conclusions and recommendations

Work is, unambiguously, good for our health (Coats and Max, 2005; Waddell and Burton, 2006a). It provides us with income, generates social capital and gives us purpose and meaning. Even when unwell or injured, remaining in work – at least in some capacity – is often better for recovery than long periods away from work. If Ireland’s workforce is to be productive and competitive in the global economy, and if the quality of their working lives is to be enhanced, it is important that a high proportion of the workforce is, as far as possible, fit for work.

The evidence presented in this report illustrates that a large proportion of working age people in Ireland are, or will be, directly affected by musculoskeletal conditions (MSDs). This can have very significant social and economic consequences for these individuals and their families, it can impede the productive capacity of the total workforce and parts of Irish industry and it can draw heavily on the resources of both the health service and the benefits regime.

As in many countries, there is a disappointing shortage of clinical, epidemiological, psychological and economic evidence on the nature, extent and consequences of the MSD problem in Ireland, but we know enough to be able to conclude that MSDs will affect a growing proportion of the working age population in the coming years. However, there seems to be a lack of coherence or ‘joined-up’ thinking and action by government, clinicians and employers which focuses on the MSD **patient as worker**. While the numbers advocating the application of the biopsychosocial model to MSDs is growing, we noted that 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.

The Work Foundation has a number of recommendations for several interested parties in this field. Our intention is to encourage some of the key players to recognise that more can be done to ensure that continued active participation in the labour market is almost always a strongly positive force for health, fulfilment and for prosperity.

5.1

Recommendations for employers

- Managerial awareness-raising and training must include a health and well-being component. Managers are in the front line of staff absence and are in a good position to spot the early warning signs of a problem and to help rehabilitate employees after a period away from work. Despite the current focus on ‘stress’, managers in Irish organisations need to be aware that MSDs can be even more of a problem for their staff and for the whole organisation.

Conclusions and recommendations

- Imaginative job design will assist rehabilitation. Managers can change the way work is organised (including simple changes to working time arrangements) to help prevent MSDs getting worse and to help people with MSDs to return to work. They need to do this in a way which preserves job quality, avoids excessive or damaging job demands and takes heed of ergonomic good practice.
 - Challenge GPs. If sick notes from GPs are not providing a clear enough indication of the nature of the health problem an employee has, and its impact on their capacity to work, employers should challenge and clarify the GP's assessment, if only to help understand which tasks the employee can still perform, or what support they might need to return to work.
 - Intervene early. Employers should always take action sooner rather than later because caution and delay can only make matters worse. As long as they behave compassionately and make decisions based on evidence and on expert opinion, early intervention cannot be construed as harassment and can often hasten recovery or rehabilitation.
 - Use occupational health advice. Vocational rehabilitation carefully organised and tailored to the individual, can make a real difference to return to work, productivity, morale and sustainability of performance. Involve occupational health professionals as early as possible.
 - Beyond legal compliance. Try to avoid a 'risk management' mentality when dealing with an employee with an MSD, this can often lead to delay and ambiguity. In almost all cases, the employee is better off at work.
 - Use the biopsychosocial framework. Thinking about the physical symptoms of the MSD without considering the psychological and social dimensions, can mean that the work-related *causes* of an MSD, or the work-related *benefits* of rehabilitation can be underestimated.
 - Focus on capacity not incapacity. Employers can catastrophise too! Most workers with MSDs can continue to make a great contribution at work if they are allowed to. They do not need to be 100 per cent fit to return to work, and a little lateral thinking will allow you to give them useful work to do which will support them on their journey back to full productive capacity.
-
- Focus on capacity not incapacity. It's natural to be anxious or even guilty about the parts of your job which you may find difficult to perform because of your MSD. But you still have much to contribute and you should play to your strengths. Your specialist

5.2

Recommendations for employees

knowledge and experience doesn't disappear just because you are suffering pain, discomfort or mobility problems, you can still contribute in many ways. Work with your managers and your colleagues to find out how you can maximise your impact at work within the constraints of your condition. Be open with them and they should respond better.

- Talk early. Your line manager, despite what he or she might tell you, is not a mind-reader. If your MSD is causing you difficulty or you anticipate a period when you will need to adjust your working time, talk to your manager so that you can both plan what to do about it. The earlier the better as managers don't like last minute surprises, but they can usually find a solution to most problems if they have some notice. You might also find it useful to talk to your union representative, your HR manager or someone in occupational health. Don't delay.
 - Play an active part in the management of your condition. Your MSD is bound to get you down sometimes and you will feel like it's controlling your life at home and at work. But you don't need to be a passive victim of pain or immobility. Find out more about your condition, watch for patterns in pain or fatigue and learn how you can minimise its impact on your functioning and your mood. This can sometimes be very hard to do, but persevere: people who play an active part in the management of their condition tend to get back to work more quickly.
 - Know your rights. As both a patient and as a worker you should know what support and advice you are entitled to. If you are a trade union member, your union should be able to guide you on much of this.
 - Family involvement in job retention and rehabilitation. Your family and friends are important sources of support. They may not realise that staying in or returning to work is both possible and desirable. You need to help them to help you by getting them involved in your rehabilitation at work. Even small adjustments to working time or travel to work arrangements can make the world of difference.
-
- Identify where job retention or early return to work is good for the patient. It is easy to assume that work is unambiguously bad for your patient, especially if you suspect that aspects of their job make their symptoms worse. Consider carefully whether, with some adjustments you can recommend staying at work on lighter duties or with adjusted hours might still be a better option than a prolonged absence from work.
 - Think beyond the physical symptoms. Bring to bear your understanding of the biopsychosocial model and the limitations of the biomedical model in your diagnosis of the patient and – most importantly – your assessment of the role that their job might

5.3 Recommendations for GPs

play in helping them stay active and avoid isolation. As a GP you are ideally placed to identify the early presentation of many MSDs. Where appropriate, you should seek to refer patients to specialist teams as early as practicable, to enable management of the condition to begin.

- Avoid catastrophising. A patient can hold a very negative view of the impact and likely progression of their condition if the way that clinicians present it focuses on incapacity rather than capacity.
 - Encourage self-management. Try to ensure that the patient can adopt strategies to manage aspects of their own condition, especially if they are staying in or returning to work. A feeling of empowerment and control will help their mood and ensure that they can keep on top of important aspects of their incapacity while at work.
 - Early intervention. The evidence suggests that long periods away from work are usually bad for MSD patients. The longer they are away from work, the more difficult it is to return. Early action, preferably in partnership with the patient and their employer, can help achieve a balance between the individual's need for respite and their need to work.
-
- Think beyond the physical symptoms. More importantly, ensure employers, employees and GPs fully appreciate how this multi-factor perspective can contribute to constructive, active, participative and sustainable rehabilitation. Shape your interventions and advice around the three domains of the biopsychosocial model and help employers see how small workplace adjustments can bring wider benefits than just compliance with the Employment Equalities Act.
 - Early intervention. OH professionals, above all others, understand the benefits of early interventions with MSDs. They must play a proactive part in mediating between employer and employee, or employer and GP to ensure that the patient can use return to work as a positive part of the way they learn to manage their condition and maintain their sense of self-worth and self esteem.
 - Encourage self-management. Working with the employee, their colleagues and their manager, help the individual to find strategies to manage their own condition. This will enable them to make their own decisions about their working arrangements.
 - Support managers with job design interventions. Making changes to work demands under the Employment Equalities Act is often seen by managers as a way of complying with the law. Helping managers to look at job redesign as a more constructive way of meeting the needs of a patient/worker with an MSD and meeting changing customer demands can help them to see the business benefits of more flexible working arrangements.

5.4

Recommendations for occupational health professionals

5.5

Recommendations for government

- Take seriously the existing evidence that the proportion of the Irish workforce with MSDs is likely to grow over the next few decades. While Ireland has relatively low prevalence today – compared with the rest of the EU – this situation will not last. Ireland has the benefit of learning from good practice elsewhere and the government should act now to put such measures in place.
- Review the extent of collaborative working between the DFSA and the Department of Health and Children on the issues of job retention, early intervention, the costs to society of people with MSDs being detached from the labour market and vocational rehabilitation. The government should also consider a national service framework for the treatment of people with MSDs. This framework should enshrine the principle that job retention or return to work are legitimate clinical outcomes.
- Review the definitions of MSDs in the current classification of occupational diseases beyond their current narrow focus. In addition, formally acknowledge that many MSDs and other chronic conditions (such as rheumatic diseases, multiple sclerosis) are not caused by work, but may inhibit participation at work.
- Access to clinical expertise needs to improve. The apparent shortage of consultant rheumatologists is affecting the ability of citizens of working age to get access to early interventions which may save their jobs. Similarly, the government should conduct some workforce planning in the medical workforce to establish if it will have sufficient clinical staff (eg physiotherapists) to accommodate the projected growth in MSDs as the population, and the workforce, ages.
- Help make GPs more effective in handling occupational health issues. This will require an input into GP training, through postgraduate medical education and training. In fact, we believe that medical training at all levels, from undergraduate to continuing professional development would benefit from inclusion of health and work issues, especially if the health of the working age population is set to deteriorate.
- Bring forward proposals to replace the current system of sickness certificates with a UK-style 'Fit Note' which encourages GPs to indicate what a worker is still capable of performing. This would help other healthcare professionals and employers to plan return to work and to make appropriate adjustments to job demands and/or working time.
- Consider the piloting of the allocation of trained occupational health advisors in selected GP surgeries to offer advice of the best way of supporting patients with MSDs staying in work or returning to work.
- Managing a phenomenon which is not being measured is very hard and can lead to the misdirection of effort and resources. The quality of data in Ireland on the health of its working age population is uniformly poor. It is almost impossible to build up an accurate

Conclusions and recommendations

or comprehensive picture of levels of absence from work, work-related incapacity and its causes and the level of mental illness in the workforce. This represents a serious impediment to both evidence-based policy-making and to the pragmatic targeting of expertise and resources.

References

- Akesson, K. Dreinhofer, K., & Woolf, A.D. (2003). Improved education in musculoskeletal disorders is necessary for all doctors. **Bulletin of the World Health Organisation**, **81**, 677-683
- Akkoc, N. (2008). Are spondyloarthropaties as common as rheumatoid arthritis worldwide? A review. **Current Rheumatology Reports**, **10**, 371-378
- Alavinia, S.M. & Burdorf, A. (2008). Unemployment and retirement and ill-health: a cross-sectional analysis across European countries. **International Archives of Occupational and Environmental Health**, **82**, 39-45
- ASAI. (2008), **Irish People Urged Not to Dismiss Lower Back Pain**. Press Release, Ankylosing Spondylitis Association of Ireland, www.ankylosing-spondylitis.ie/cmt/files/1216920511.pdf
- Armstrong, K. (2006). **Life After Rover**. The Work Foundation.
- Arthritis Ireland. (2008). **Work and Arthritis Programme – Survey Results**. www.arthritisireland.ie/research/research.php
- Backman, C. L. (2004). Employment and work disability in rheumatoid arthritis. **Current Opinion in Rheumatology**, **16**, 148-152
- Bekkering, G., Henriks, H., Koes, B., Oostendorp, R., Ostelo, R., Thomassen, J., & Van Tulder, M. (2003). Dutch Physiotherapy Guidelines for Low Back Pain, **Physiotherapy** **89** (2)
- Bigos, S. J., Battie, M. C., & Spengler, D. M. (1992). A longitudinal, prospective study of industrial back injury reporting, **Clinical Orthopaedic Related Research**, **279**, 21-34
- Block, A.R., Kremer, E. F., & Gaylor, M. (1980). Behavioural treatment of chronic pain: the spouse as a discriminative cue for pain behaviour. **Pain**, **9** (2), 243-252
- Boonen, A., Chorus, A., Miedema, H., van der Heijde, Landewé, D. R., Schouten, H., van der Tempel, & Van der Linden, S. (2001). Withdrawal from labour force due to work disability in patients with ankylosing spondylitis. **Annals of Rheumatic Diseases**, **60**, 1033–1039
- Breen, A., Langworthy, J., & Bagust, J. (2005). Improved early pain management for musculoskeletal disorders. **HSE Research report**, **399**. London: Health and Safety Executive
- Brinkley, I. (2006), **Defining the Knowledge Economy**. London: The Work Foundation
- Brinkley I., Clayton, N., Coats D., Hutton W., & Overell, S. (2008), **Hard Labour: Jobs, Unemployment and the Recession**. London: The Work Foundation
- Buchbinder, R., Jolley, D., & Wyatt, M. (2001). Population based intervention to change back pain beliefs and disability: three part evaluation. **British Medical Journal**, **322**, 1516-1520
- Burton, A K. (1997). Back injury and work loss. Biomechanical and psychosocial influences. **Spine**, **22**, 2575-2580

References

- Burton, A K. (2005). How to prevent low back pain. **Best Practice and Research in Clinical Rheumatology**, **19** (4), 541-555
- Burton, W., Morrison, A., Maclean., R., & Ruderman, E. (2006). Systematic review of studies of productivity loss due to rheumatoid arthritis, **Occupational Medicine**, **56**, 18-27.
- Central Statistical Office (2004). **Disability Update**. Quarter 1
- Chorus, A. M. J., Miedema, H. S., Wevers, C. W. J., & van der Linden, S. (2001). Work factors and behavioural coping in relation to withdrawal from the labour force in patients with rheumatoid arthritis. **Annals of the Rheumatic Diseases**, **60**, 1025-1032
- Chorus, A. M. J., Boonen, A., Miedema, H.S., & van der Linden, S. (2002). Employment perspectives of patients with ankylosing spondylitis. **Annals of the Rheumatic Diseases**, **61**, 693-699
- Chorus, A. M. J., Miedema, H.S., Boonen, A., & van der Linden, S. (2003). Quality of life and work in patients with rheumatoid arthritis and ankylosing spondylitis of working age. **Annals of the Rheumatic Diseases**, **62**, 1178-1184
- Coats, D. & Lehki, R. (2008). **'Good Work': Job Quality in a Changing Economy**. London: The Work Foundation
- Coats, D. & Max, C. (2005). [Healthy Work, productive workplaces: why the UK needs more good jobs](#). London: The Work Foundation.
- Cooper, N. (2000). Economic burden of rheumatoid arthritis: a systematic review. **Rheumatology**, **39**, 1
- Dagenais, S., Caro, J., & Haldeman, S. (2008). A systematic review of low back pain cost of illness studies in the United States and internationally. **The Spine Journal**, **8**, 8-20
- Dagfinrud, H., Mengshoel, A. M., Hagen, K. B., Loge, J. H. & Kvien, T., K. (2004). Health status of patients with ankylosing spondylitis: a comparison with the general population. **Annals of Rheumatic Diseases**, **63**, 1605-1610
- Department of the Taoiseach. **Building Ireland's Smart Economy**. December 2008
- de Buck, P., Schoones, J.W., Allaire, S.H. & Vliet Vlieland, T.P.M. (2002). Vocational rehabilitation in patients with chronic reumatoid diseases: A systematic literature review. **Seminars in Arthritis and Rheumatism**, **32** (3), 196-203
- de Croon, E. M., Sluiter, J. K., Nijssen, T. F., Dijkmans, B. A. C., Lankhorst, G. J., & Frings-Dresen, M. H. W. (2004). Predictive factors of work disability in rheumatoid arthritis: a systematic literature review. **Annals of the Rheumatic Diseases**, **63**, 1362-1367
- der Tempel, H. & van der Linden, S. (2001). Withdrawal from labour force due to work disability in patients with ankylosing spondylitis. **Annals of the Rheumatic Diseases**, **60**, 1033-1039
- Devereux, J., Rydstedt, L., Kelly, V., Weston, P., & Buckle, P. (2004). The role of work stress and psychological factors in the development of musculoskeletal Disorders. **Health and Safety Executive Research Report 273**. London: Health & Safety Executive

- Ekberg, K. (1995). Workplace changes in successful rehabilitation, **Journal of Occupational Rehabilitation**, **5**, 253–269
- EUROGIP. (2007). **Musculoskeletal disorders in Europe: Definitions and statistics**. Retrieved April 15, 2009 from http://www.eurogip.fr/docs/TMS_07-Eurogip-25-EN.pdf
- European Foundation for the Improvement of Living and Working Conditions. (2007). **Managing Musculoskeletal Disorders** <http://www.eurofound.europa.eu/ewco/studies/tn0611018s/tn0611018s.htm>
- European Trade Union Institute. (2007). **Musculoskeletal disorders: An ill-understood pandemic**. Brussels: ETUI
- Eurostat, Statistics in Focus. 15/2004. **Occupational Diseases in Europe in 2001**
- Feuerstein, M., Shaw, W.S., Lincoln, A.E., Miller, V.I., & Wood, P.M. (2003). Clinical and workplace factors associated with a return to modified duty in work-related upper extremity disorders. **Pain**, **102**, 51–61
- Feuerstein, M., Shaw, W. S., Nicholas, R. A., & Huang, G. D. (2004). From confounders to suspected risk factors: psychosocial factors and work-related upper extremity disorders. **Journal of Electromyography and Kinesiology**, **14**, 171-178
- Frank J, Sinclair S, Hogg-Johnson S, Shannon H, Bombardier C, Beaton D, et al. (1998). Preventing disability from work-related low-back pain. New evidence gives new hope – if we can just get all the players onside. **Canadian Medical Association Journal**, **158**(12):1625–31
- Frank, A. O. & Chamberlain, M. A. (2006). Rehabilitation: an integral part of clinical practice. **Occupational Medicine**, **56**, 289-293
- Gannon, B (2006), Disability Benefit: Controlled or Under-Controlled? In Callen (Ed), **Budget Perspectives 2007**. ESRI
- Gignac M, Cao X, Lacaille D, Anis A, & Badley E (2008), Arthritis-related work transitions: A prospective analysis of reported productivity losses, work changes, and leaving the labour force, **Arthritis Care & Research**, **59** (12), 1805-1813
- Gordeev, V. S., Maksymowych, W. P., Evers, S. M., Ament, A., Schachna L. & Boonen, A. (2009). The role of contextual factors on health-related quality of life in ankylosing spondylitis. **Annals of Rheumatic Diseases**, published online 11 Mar 2009, doi:10.1136/ard.2008.100164
- Halpern M, Cifaldi M & Kvien T (2008). Impact of adalimumab on work participation in rheumatoid arthritis: comparison of an open-label extension study and a registry-based control group, **Annals of Rheumatic Diseases**, published online 1 Oct 2008; doi:10.1136/ard.2008.092734
- Hamberg, K., Johansson, E., Lindgren, G. & Westman, G. (1997). The impact of marital relationship on the rehabilitation process in a group of women with long-term musculoskeletal disorders. **Scandinavian Journal of Social Medicine**, **25** (1), 17-25

References

- Health and Safety Agency. (2004). **Annual Report 2003**
- Health and Safety Executive (HSE). (1999). [The costs to Britain of workplace accidents and work-related ill health in 1995/96](#). London: Health and Safety Executive
- Husted, J. A., Gladman, D. D., Farewell, V. T. & Cook, R. J. (2001) Health-related quality of life of patients with psoriatic arthritis: a comparison with patients with rheumatoid arthritis. **Arthritis and Rheumatism** **45**, 151-158
- IBEC, (2004), **Workplace Absence Survey – 2004**, Irish Business and Employers Confederation
- Indecon (2006), **Economic Impact of Safety, Health and Welfare at Work Legislation**, a report for the Department of Enterprise, Trade and Employment
- Katz, W.A. (2002). Musculoskeletal Pain and its Socioeconomic Implications. **Clinical Rheumatology, Supplement, 1**, S2–S4
- Kavanaugh, A. (2008). Health economics: implications for novel antirheumatic therapies. **Annals of the Rheumatic Diseases: 64**, iv65-iv69
- Kemler, M. A. & Furnee, C. A. (2002). The impact of chronic pain on life in the household. **Journal of Pain Symptom Management, 23** (5), 433-441
- Kerns, R. D., Haythornthwaite, J., Southwick, S., & Giller, E. L. (1990). The role of marital interaction in chronic pain and depressive symptom severity. **Journal of Psychosomatic Research, 34**(4), 401-408
- Kobelt, G. (2007). Thoughts on health economics in rheumatoid arthritis. **Annals of the Rheumatic Diseases: 66**, iii35-iii39
- Leardini, G., Salaffi, F., Montanelli, R., Gerzeli, S. & Canesi, B. (2002). A multi-center cost-of-illness study on rheumatoid arthritis in Italy. **Clinical and Experimental Rheumatology, 20**, 505-515
- Lisbon European Council. Presidency Conclusions. 2000 (www.europarl.europa.eu/summits/lis1_en.htm) accessed 16.04.09
- Lundkvist, J., Kastang, F., & Kobelt, G. (2008). The burden of rheumatoid arthritis and access to treatment: health burden and costs. **European Journal of Health Economics, 8** (Supple 2), S49-S60
- Luqmani, R., Hennell, S., Estrach, C., Birrell, F., Bosworth, A., Davenport, G., Fokke, C., Goodson, N., Jeffreson, P. Lamb, E., Mohammed, R. Oliver, S. Stableford, Z., Walsh, D. Washbrook, C. & Webb, F. (2006). on behalf of the British Society for Rheumatology and British Health Professionals in Rheumatology Standards. Guidelines and Audit Working Group British Society for Rheumatology and British Health Professionals in Rheumatology Guideline for the Management of Rheumatoid Arthritis (The first two years). **Rheumatology**

- MacGregor, E. A., Brandes, J., Eikermann, A., & Giammarco, R. (2004), Impact of migraine on patients and their families: the Migraine and Zolmitriptan Evaluation (MAZE) survey – Phase III. **Current Medical Research Opinion**, **20** (7),1143-1150
- McLaren, N. (2006). Interactive dualism as a partial solution to the mind-brain problem for psychiatry. **Medical Hypotheses**, **66** (6),1165-73
- Meijer, E., Sluiter, J., & Frings-Dresen, M. (2005). Evaluation of effective return-to-work treatment programs for sick-listed patients with non-specific musculoskeletal complaints: a systematic review. **International Archives of Occupational and Environmental Health**, **78** (7), 523-532
- Meijer, E., Sluiter, J., Heyma, A., Sadiraj, K., & Frings-Dresen, M. (2006). Cost-effectiveness of multidisciplinary treatment in sick-listed patients with upper extremity musculoskeletal disorders: a randomised, controlled trial with one-year follow-up. **International Archives of Occupational and Environmental Health**, **79** (8), 654-664
- Nachemson, A., Waddell, G., & Norlund A. (2000) **Epidemiology of neck and low back pain**. In Nachemson, A. & Jonsson E., (eds.) **Neck and Back Pain: The scientific evidence of causes, diagnosis and treatment**. Philadelphia,165-188
- O’Shea, E. & Kennelly, B., (2008), **The Economics of Mental Health Care in Ireland**, Mental Health Commission
- OECD. (2008). **Economic Survey of Ireland, 2008**. Policy Brief, Organisation of Economic Co-operation and Development
- O’Brien, D and King, E, (2006). **2020 Vision: Ireland’s Demographic Dividend**. Dublin: NCB Stockbrokers
- Parent-Thirion, A., Fernández Macías, E., Hurley, J., & Vermeulen, G. (2005). **Fourth European Survey on Working Conditions**. Dublin: European Foundation for the Improvement of Living Standards
- Pugner, K, M., Scott, D.I., Holmes, J.W., & Hieke, K. (2000). The costs of rheumatoid arthritis: an international long-term view. **Seminars in Arthritis and Rheumatism**, **29**, 305-320
- Punnett, L. & Wegman, D. (2004). Work-related musculoskeletal disorders: the epidemiologic evidence and the debate. **Journal of Electromyography and Kinesiology**, **14** (1), 13-23
- Schultz, I. Z., Stowell, A. W., Feuerstein, M., & Gatchel, R. J. (2007). Models of return to work for musculoskeletal disorders. **Journal of Occupational Rehabilitation**, **17** (2), 327-352
- Scottish Intercollegiate Guidelines Network (SIGN) (2000). **Management of early rheumatoid arthritis**, SIGN publication 48
- Sieper, J., Braun, J., Rudwaleit, M., Boonen, A., & Zink, A. (2002). Ankylosing spondylitis: an overview. **Annals of the Rheumatic Diseases**, **61** (Supplement III), iii8-iii18

References

- Sokka, T. & Pincus, T. (2001). Markers for work disability in rheumatoid arthritis. **Journal of Rheumatology**, **28**, 1718-1722
- Sullivan, M. J. & D'Eon, J. L. (1990). Relation between catastrophising and depression on chronic pain patients. **Journal of Abnormal Psychology**, **99**, 260-263
- The Bone & Joint Decade. (2005). **European Action Towards Better Musculoskeletal Health: A public health strategy to reduce the burden of musculoskeletal conditions**. Lund: The Bone & Joint Decade, Department of Orthopedics, University Hospital. Retrieved April 15, 2009 from http://ec.europa.eu/health/ph_projects/2000/promotion/fp_promotion_2000_frep_15_en.pdf
- van Duijn, M. & Burdorf, A. (2008). Influence of modified work on recurrence of sick leave due to musculoskeletal complaints. **Journal of Rehabilitation Medicine**, **40**, 576-581
- Van Eerd, D., Beaton, D., Cole, D., Lucas, J., Hogg-Johnson, S., & Bombardier, C. (2003). Classification systems for upper-limb musculoskeletal disorders in workers: a review of the literature. **Journal of Clinical Epidemiology**, **56**, 925-936
- Van Jaarsveld, C.H.M., Jacobs, J.W.G., Schrijvers, A.J.P., Heurkens, A.H.M., Haanen, H.C.M., & Bijlsma, J.W.J. (1998). Direct cost of rheumatoid arthritis during the first six years: A cost-of-illness study. **British Journal of Rheumatology**, **37**, 837-847
- Veale A, Woolf A, & Carr A (2008), Chronic Musculoskeletal Pain and Arthritis: Impact, Attitudes and Perceptions. **Irish Medical Journal**, **101** (7), 208-210
- Waddell, G. & Burton, A K., (2006 a). **Is work good for your health and well-being?** London: Department of Work and Pensions
- Waddell, G. & Burton, A. K. (2006 b). **Principles of rehabilitation for common health problems**, in M O'Donnell, **Rehabilitation: Keeping people in work**. Chief Medical Officer's Report 2006. UnumProvident, Dorking
- Wallenius, M., Skomsvoll, J. F., Koldingsnes, W., Rødevand, E., Mikkelsen, K., Kaufmann, C. & Kvien, T. K. (2008). Work disability and health-related quality of life in males and females with psoriatic arthritis. **Annals of Rheumatic Diseases**, published online 29 May 2008, doi:10.1136/ard.2008.092049
- World Health Organisation Scientific Group (WHO) (2001). **International Classification of Functioning, Disability and Health**. Geneva: WHO <http://www3.who.int/icf/icftemplate/cfm>
- WHO Scientific Group (2003). **The burden of musculoskeletal conditions at the start of the new millennium**. Geneva: WHO
- Werner, E. L., Lærum, E., Wormgoor, M. E., Lindh, E. & Indhal, A. (2007). Peer support in an occupational setting preventing LBP-related sick leave. **Occupational Medicine**. Doi: 10.1093/occmed/kqm094
- Woolf, A. D. (2004). Economic Burden of Rheumatic Diseases. In: Edward D Harris et al., eds, **Kelley's Textbook of Rheumatology**, Volume 1, 7th ed, Ch 28

- Young, A., Dixey, J., Cox, N., Davis, P., Devlin, J., Emery, P., Gallivan, S., Gough, A., James, D., Prouse, P., Williams, P., & Winfield, P. (2000). How does functional disability in early rheumatoid arthritis (RA) affect patients and their lives? Results of five years of follow-up in 732 patients from the Early RA Study (ERAS). **Rheumatology**, **39**, 603-611
- Young, A., Dixey, J., Kulinskaya, E., Cox, N., Davies, P., Devlin, J., Emery, P., Gough, A., James, D., Prouse, P., Williams, P., & Winfield, P. (2002). Which patients stop working because of rheumatoid arthritis? Results of five years' follow up in 732 patients from the Early RA Study (ERAS). **Annals of Rheumatic Diseases**, **61**, 335-340
- Zampolini, M., Bernadinello, M. & Tesio, L. (2007). RTW in back conditions. **Disability and Rehabilitation**, **29** (17), 1377-1385

Appendix 1: Interviews and consultation with experts

We interviewed or consulted the following people during the course of our research and we are very grateful for the time each spent with us. We have taken their views into account in writing this report, though their participation in the study does not in any way imply endorsement of the report's conclusions.

Dr Michael Barry	National Centre for Pharmacoeconomics
John Church	Arthritis Ireland
Professor Oliver Fitzgerald	St Vincent's University Hospital
Dr Brenda Gannon	Senior Researcher, ICGS, Department of Economics, National University of Ireland
Professor Richard Layte	Economic and Social Research Institute (ESRI)
Michelle Towey	Arthritis Ireland
Professor Brendan Whelan	Director of Research, Centre for Ageing Research and Development, Trinity College Dublin

Appendix 2: 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.

Appendix 2: Benchmarking grid

	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		
Romania	\$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	-	-
Spain	-	66.9*	-	-	58.4*	60.5*	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*	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*	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*	63.6	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

Appendix 2: Benchmarking grid

	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		
Romania	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	-
Spain	-	-	-	-	-	-	-
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)

Appendix 2: Benchmarking grid

	Sickness absence due to health reasons (%)	Average days absent ¹	DALYs MSDs (% of Total)		DALYs RA (% of Total)	Prevalence work-related backache (Working population)	Number of RA Patients (General population)	Physicians per 1,000	
			Male	Female				(Prevalence)	Rheumatologists*
Romania	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
Spain	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
<i>Labour indicators</i>		
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
<i>Labour indicators, continued</i>		
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
<i>Welfare indicators</i>		
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/health care 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
<i>Welfare indicators continued</i>		
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
<i>Health outcomes</i>		
Average days absent due to health reasons	The median number of days absent because of health.	Parent-Thirion, Ferrández 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
Practising 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
Practising general practitioners (GPs), density per 1,000 population 2005	Number of practising GPs per 1,000 population.	OECD, 2009c

Appendix 2: Benchmarking grid

References

- 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>
- Eurostat. (2009b). **Labour productivity per hour worked, GDP in PPS**. Retrieved on 4 June 2009 from <http://epp.eurostat.ec.europa.eu/tgm/download.do;jsessionid=9ea7974b30e89c4d0a99af7e42a9b710fb960bc43c29.e34SbxiOchiKc40LbNmLahiKaNyMe0?tab=table&plugin=0&language=en&pcode=tsieb040>
- Eurostat. (2009c). **Social benefits by function – (per cent of total benefits)**. Retrieved on 4 June 2009 from <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00106&plugin=1>
- EWCS – fourth edition. (2005). [Data file]. Dublin, Ireland: European Foundation for the Improvement of Living and Working Conditions
- Lundkvist, J., Kastäng, F. & Kobelt, G. (2008). The burden of rheumatoid arthritis and access to treatment: health burden and costs. **European Journal of Health Economics**, 8(Supple 2), 49-60
- OECD (2009a). **Annual Labour Force Statistics: Population 15-64 as per cent of population**. Retrieved on 15 July 2009 from <http://stats.oecd.org/Index.aspx>
- OECD (2009b). **OECD Fact book 2009: Economic, Environmental and Social Statistics**. Retrieved on 15 July 2009 from <http://www.sourceoecd.org/rpsv/factbook2009/index.htm>
- OECD. (2009c). **OECD Health Data 2008 – Selected Data**. Retrieved on 4 June 2009 from <http://www.ecosante.fr/index2.php?base=OCDE&langh=ENG&langs=ENG>
- OECD (2009d). **OECD Society at a Glance**. Retrieved on 15 July 2009 from <http://oberon.sourceoecd.org/vl=646290/cl=23/nw=1/rpsv/societyataglance2009/index.htm>
- Osterkamp, R. & Rohn, O. (2007). Being on sick leave: Possible explanations for differences of sick-leave days across countries. **CESifo Economic Studies**, 53, 91-114
- Parent-Thirion, A., Fernández Macías, E., Hurley, J. & Vermeylen, G. (2007). **Fourth European Survey on Working Conditions**. Dublin: European Foundation for the Improvement of Living Standards.
- Royal College of Physicians. (2008). **Consultant Physicians Working for Patients, The duties, responsibilities and practice of physicians**. 4th edition. London: The Royal College of Physicians. Retrieved on 9 June 2009 from <http://www.rcplondon.ac.uk/pubs/contents/03560858-60e3-44c3-87eb-716a6d1d696c.pdf>
- WHO. (2006/7). **Highlights on health**. Geneva: WHO

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording and/or otherwise without the prior written permission of the publishers. This publication may not be lent, resold, hired out or otherwise disposed of by way of trade in any form, binding or cover other than that in which it is published, without the prior consent of the publishers.

We provide:

Research

Consultancy

Leadership

Advocacy

Partnership

© The Work Foundation

Registered as a charity no: 290003

First published: April 2009

The Work Foundation

21 Palmer Street

London

SW1H 0AD

Telephone: 0207 976 3519

Email: jtaylor@theworkfoundation.com

Website: www.theworkfoundation.com