

Introduction

A summary of the scientific and legal status of this subject (as at October 2000) was published in the last issue of this journal.

Since then, the Occupational Safety and Health Administration (OSHA) in the United States have published a significant addition to the literature on this subject. The Ergonomics Standard became legally effective on January 16th 2001, significant actions must be effected before 14th Oct 2001.

The standard addresses many of the issues identified previously under the project heading, DRSI, but also includes references to other outcomes such as back pain, carpal tunnel syndrome and so on.

The trend is for developments in the US to manifest in the UK. This suggests that this is an opportune time to report on and assess the new standard as it affects DRSI. Peter Skinner MEP, and spokesperson on health and safety for the Commission, has already publicly referred to the Standard in positive terms.

A description and analysis of the standard is presented below.

There are some doubts in the USA about the validity of the advice prescribed in the standard. These doubts currently find expression in legal proceedings.

The discussion of the standard is followed by the regular monitoring reports provided under this State of Knowledge project and inspired by the recent scientific literature that is relevant to DRSI.

The OSHA Ergonomics Standard

Purport

To reduce the number and severity of musculoskeletal disorders (MSD) caused by acute or chronic exposure to [ergonomic] risk factors in the work place in the USA. By the definition given, a MSD is a disorder of the muscles, tendons, ligaments, joints, cartilage, blood vessels or spinal discs occurring in the neck, shoulder, forearm, wrist, hand, abdomen (hernias only), back, knee, ankle, and foot.

The scope of the standard does not include injuries caused by, slips, trips, falls, vehicle accidents or the like. It is intended to include injuries caused by prolonged over exertion and tissue compression arising from a poor fit between system of work and employee.

Method

OSHA has devised a methodology to be adopted in general industry but excluding named industries that seem to be characterised by a high turnover of staff or fall under a different legal regime.

- 1) Employers must provide basic information to employees about common MSDs and how to recognise them, the benefits of early reporting and, common risk factors at work. This information is to be provided regardless of the risk presented at work.
- 2) Once an MSD is reported employers must determine whether or not it is significant (e.g. symptoms last more than 7 days) and if so is it reasonably likely to be work related (caused, predominantly caused, materially caused or actually aggravated by work). The latter, is determined by application of the Basic Screening Tool provided in the standard.
- 3) If the MSD is work related and there is evidence that it is not a one-off incident then a prescribed programme of actions must be undertaken and maintained. Implementation of such a programme will be deemed sufficient to prevent prosecution.
- 4) Actions included in the prescribed ergonomics programme:
 - Assignment of management responsibilities for the programme.
 - Training and resources for the assignee.
 - Training of the relevant supervisors in the area where the MSD arose.
 - Employee participation in the development of the programme.
 - Training of employee participants.
 - Hazard analysis (using any of a wide range of listed techniques).
 - Corrective action; to the standard of not reasonably likely to cause MSD (defined in the Basic Screening Tool).

- Work Restriction Protection. Paid leave of absence.

Initial LPC comments

Clearly there are differences in the legal regimes and availability and skills of the health services of the US and the UK. Not all the prescribed actions listed above could be directly translated for use here. However, the definition of an MSD, the test of its significance and the test for work-relatedness could be more readily imported.

In outline, OSHA has adopted the use of health surveillance to trigger the process for implementing a prescribed programme for ergonomic risk management. That is, existing significant harm is to be used as evidence that there is a need for action. This, reactionary aspect of the standard has been debated for the last 10 years. A number of participants in this debate objected to the proposal's incident trigger on the basis that it was reactive and appeared inconsistent with OSHA's mission "to prevent the first injury".

It would seem to the outside observer that this approach has been adopted in the absence of a satisfactory method for identifying ergonomic risk factors and interventions *ab initio*. In the absence of quantitative risk factors or demonstrable interventions this approach would seem to us to be a reasonable one. A list of risk assessment tools is provided in the new law, but their quantitative/predictive value is not generally agreed.

The need to provide employees with information on the recognition and likely causes of MSDs is apparent. Without accurate information, employees cannot play a proper role in the reporting phase of the incident trigger. The accuracy of the information provided by OSHA remains debatable.

The need to specify employment protection for employees in the USA is probably self-evident. Without it, US employees would have to weigh the pros and cons of reporting any suspected work-related MSD to their employer. Without such reports, the system would fail at the first hurdle; reporting a suspected incident. Adequate employment protection may already be in place in the UK (SSP, DDA).

Early reporting of MSDs is widely recognised as an essential element of any programme that would successfully prevent unnecessary severity and chronicity of harm. Immediate assessment and medical care provides the opportunity to prevent a spiraling descent into chronic disability. There remains the question of the accuracy of early reports, and it is not obvious that the benefits to the employer outweigh the costs. Both factors will be determined by the definition of significant MSD and on the details of the Basic Screening Tool.

It has been argued that the use of staff as guinea pigs to detect hazards at work also has the effect of setting a standard that is driven by the need to protect the most vulnerable or predisposed. It is reasonably plausible that these will be the first people to report significant MSDs. Therefore the requirement to set up an ergonomics programme is driven by a rather protective test. This would not seem to challenge common law; the requirement to take your staff as you find them is long established. However, the need to take all your employees as if they were the most vulnerable is not the normal standard of the duty of care.

No scientific evidence is offered as to the efficacy of the prescribed programme actions, it would seem that they are in the realm of, 'best practice'. The actions are on the whole, organisational and designed such that medical care can be provided and reasonable workplace adjustments can be identified and implemented. Objectors to the new standard described their own 'highly successful' ergonomics programmes, but complained that these would not meet the requirements of the new standard.

OSHA go to great lengths to defend the standards set in the Basic Screening Tool. Their effort seems to be inversely proportional to the strength (though not the quantity) of their evidence. The principle question is whether this standard is driven by the need to protect the predisposed or whether it is driven by the proper concern for the health of the average man or woman. The evidence seems to support the former interpretation, but this is not explicitly stated in the 610 page, supporting document.

Caused

The scope of the standard appears to be limited to disorders caused by exposures to adverse ergonomic conditions at work and thereafter actually made worse by exposure to risk factors at work (not necessarily the same risk factors in each case). However, OSHA has the right to prescribe standards for any circumstance that creates a significant risk of material impairment of health. On a closer inspection of the accompanying guidance it is clear that aggravation of developing MSDs of whatever cause is included in the scope. This inclusion of such a broad responsibility on employers has

given rise to a great deal of protest. Could it be right that employers should 1) be responsible for injuries that arise away from work and 2) adapt their workplaces to encourage the injured to go to work?

Comments as they affect DRSI

Definition of MSD

In our opinion, the definition (above) of MSD does not accurately include chronic pain syndromes such as diffuse RSI (DRSI) or low back pain or the complications that can arise from acute injuries. The principle objection is that chronic pain conditions such as DRSI have not been shown to be purely organic conditions. However, it is likely that it was intended that these would be included.

As defined, it is our opinion that DRSI is not directly within scope, but this opinion is based on the resounding lack of evidence for a purely organic disorder. If DRSI were one day to be found to have a significant organic component it could be accurately included in the scope. In our view the causes and manifestations of DRSI require contributions from both central and peripheral systems. OSHA may not share this view.

Much of the evidence used by OSHA to support this standard refers to a few well-defined organic outcomes e.g. Carpal Tunnel Syndrome and then seeks to extrapolate to the general. The validity of this extrapolation is widely proposed by ergonomists but has yet to be adequately demonstrated.

This difficulty over the definition suggests one of the principle difficulties with defining a standard such as this. Although the general advice might result in increased comfort of workers at work, by including such a vague definition of the outcome that is to be managed, there is no way that the success or otherwise of the standard can be demonstrated or tested against the scientific literature. It is therefore not possible to form a view about whether the standard is demonstrably reasonable or based on some other test.

A demonstrably reasonable standard would have to identify which diagnosable disorder(s) was/were being prevented, mitigated or cared for by the specific actions suggested.

The Federal document supporting the Standard refers to there being strong evidence that ergonomic interventions result in reduced numbers of complaints of MSD, but offers no real evidence that this is related to reduced incidence of MSD (complaints are not the same as incidents). On closer inspection this evidence turns out to be the same evidence that was reviewed by LPC last year. Interventions have at best, a mixed record, in the scientific literature. A majority of such studies use sickness absence records and self-reported questionnaires as proxies for injuries. Some of the more convincing studies used worker participation in the design of ergonomic interventions.

Our review of intervention studies was not able to identify convincing evidence that linked specific prevention measures with desirable effects on specific diagnosable conditions.

Suggested Risk Factors

The standard suggests repetition, force, awkward postures, contact stress (e.g. using the fist as a hammer) and vibration and goes on to define these in more detail.

Four of these risk factors (repetition, force, awkward postures and vibration) were reviewed as the basis for a report on DRSI in volume 1 # 1 of this journal. The review focused on high quality studies. It was found that none of these proposed risk factors was strongly associated with those outcomes that could be included in the definition of MSD given here. Only by make assumptions about pathogenesis could they then be related to DRSI and even if they were related the relationship to these risk factors is not strong.

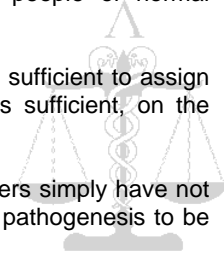
Contact stress was not reviewed previously, but as bursitis is a recognised industrial injury it should not prove surprising that it be included in the scope for MSD.

The Basic Screening Tool is reproduced in full below.

It is remarkably specific, which has the benefit that it reduces the need for judgement on the ground, but raises a number of unresolved issues with respect to DRSI.

- The Basic Screening Tool makes no mention of psychosocial factors. This implies that risk factors for MSDs are assumed to be entirely physical. We strongly doubt this assumption for any work-related MSD and especially for DRSI.

- It makes a clear reference to typing and mouse work as risks for MSDs. A recent EC report found no such association. The EC report reviewed the epidemiology up to 2000. Epidemiological studies are based on normal populations which should include normal distributions of the vulnerable and predisposed.
- The safe time allowed for typing and mouse work in the Tool is described as 4 hours a day. Every day experience suggests that this standard is not targeted at protecting people of normal disposition.
- The tool requires that exposure to one or more of the risk factors suggested is sufficient to assign the cause as work-related. In our view, none of the individual risk factors is sufficient, on the balance of probabilities, to cause MSD.
- Studies to test whether these factors are sufficient to aggravate existing disorders simply have not been done. [Extrapolation from studies of cause would require some model of pathogenesis to be adopted; pathogenesis is generally uncertain for MSDs].
- A more potent case could be made for combinations of the specified risk factors.
- It is not clear whether or not the specified exposure times are integrated over actual time or over time assigned to the particular system of work. The distinction is significant if the work involves natural rest breaks during the work cycle. If the former, then the employer has a difficult task to measure exactly when the work involves significant force (for example), if the latter, the standard has very doubtful validity or can be safely assumed to err on the side of caution.



Definition of a significant MSD

The Ergonomics Standard quotes the following definition of an MSD incident:

An MSD incident means that the MSD is work-related **and** requires: days away from work, **and/or** restricted work, **and/or** medical treatment beyond first aid **and/or** involves MSD signs or symptoms that last 7 consecutive days after the employee reports them to the employer. [Emphasis and grammar added here.]

This definition combines attribution and severity. Attribution has already been discussed above.

Our previous opinion, with respect to DRSI, is extracted from the review mentioned at the beginning of this article:

“A ... reasonable approach would be to establish timing and duration of symptoms and effect on sleep and rest.”

This is in accord with the position adopted by OSHA. In order to avoid dealing with a huge proportion of notifications of aches and pains, gate-keeping criteria are needed.

From the previous report: “A reasonable gate-keeping criterion would be:

- the point where symptoms persist several hours after beginning to rest,
and
- there is disturbed sleep attributed to unusual sensations in the affected region of the arm,
and
- symptoms return as soon as activity begins again.”

This gate keeping criterion is not based on quantitative science and makes no mention of the risk factors relied upon in the OSHA Basic Screening Tool and, is untested.

Both approaches to gate keeping are nothing more than opinion.

Some features of these gate-keeping methods are:

- OSHA relies on a test of work restriction. Such a test is a matter for company policy work organisation and the supervisor's opinion of the link to work and the validity of the reporter.
- OSHA relies on medical opinion of the need to treat beyond first aid. A wide range of non-medical factors including patient demand, political pressures, and commercial pressures may influence such opinion. In any case, early medical intervention for DRSI has not been a spectacular success in the UK.
- OSHA relies on signs or symptoms lasting 7 days after the first report to the employer. This is a complex method, involving uncertainty over the date the symptoms were first noticed. In our view, if

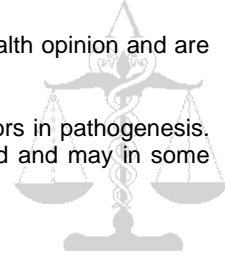
symptoms have been causing problems with work for seven days this is a reasonable test of severity.

- Our test relies on self-report, possibly backed up by the opinion of a GP, possibly in the form of a sick note. In the absence of organic/objective signs and the role of the GP as patient advocate, there will always be problems with such a test.

It should be borne in mind that the OSHA tests are supposed to work for any MSD; our test is aimed specifically at DRSI.

OSHA is able to rely on a more widespread access to professional occupational health opinion and are in a position to help form that opinion.

The two tests also differ in that OSHA has avoided reference to psychological factors in pathogenesis. Our review of DRSI came to the conclusion that such factors could not be ignored and may in some cases predominate.



Summary

The OSHA Ergonomics Standard probably should not be uncritically adopted as a standard applicable to common law duty of care, foreseeability, or causation in the UK.

The lack of adequate, practicable, quantitative, ergonomic risk assessment methods has given rise to a methodology that relies on health surveillance. This approach to risk management would seem to be appropriate for DRSI, though the details of the OSHA approach may not be entirely transferable.