

# Lighten the load!

The prevention of lower back injury  
in the healthcare sector



SLIC European Inspection and Communication Campaign: Manual Handling of Loads  
in Europe in the Transport and Care sectors.



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Part of the plan of action of the European Commission consists of improving the prevention of work-related illnesses, and in particular musculoskeletal disorders. In order to achieve this, the Commission intends primarily to ensure the more effective application of the current community regulations and has assigned a fundamental role to the SLIC. The SLIC, which stands for the Senior Labour Inspectors Committee, is charged with the efficient and uniform execution of community law in relation to health and safety at the workplace, and also with the analysis of practical issues which come to light when monitoring the application of the relevant legislation.

In 2007, the European communication and inspection campaign will focus on the transport and healthcare sectors.

The objectives are:

- to achieve greater conformity of actions with European Directive 90/269/CEE in order to reduce musculoskeletal problems in the various countries of the Union;
- to improve the awareness among employers and workers of the risks linked to the manual handling of loads and the associated prevention measures;

*This campaign is being implemented in close collaboration with the European Commission and fits within the framework of the European week of health and safety at work 2007 as organised by the European Agency for Occupational Health and Safety at Work.*



# 1 Why implement a policy to prevent lower back disorders in the healthcare sector?

Although it is difficult to point the finger at the professional category which presents the greatest risks when it comes to causing back injury, it is more or less certain that the healthcare sector is one of the leaders in this respect. Given the social and financial consequences which back injuries can lead to, preventing them is essential. The European legislature is fully aware of this and has imposed measures by means of a Directive. The European Commission decided to take a more active approach by organising a European communication and inspection campaign focused on the transport and healthcare sectors. This brochure deals with preventing back problems in the healthcare sector.

The 'manual handling of loads' means any operation involving the movement or the supporting of a load by one or more workers.

## A Some figures

Numerous studies have estimated that 60% to 90% of people will suffer a lower back disorder at some time or other in their lives. Yet the manual handling of loads poses numerous risks, notably with regard to the lower back. Musculoskeletal problems are indeed very prominent in Europe as regards work-related complaints. The results of the third European survey of working conditions, carried out in 2000, primarily confirmed that 33% of European workers (in 15 member states) were suffering from back pain. Workers in the healthcare sector are particularly prone to the problem: the European survey revealed that 32.5% of workers employed in this sector complain of back trouble.

## B Legal obligation

Complying with the directives on health and safety at work allows a large number of complaints relating to work-related musculoskeletal problems to be avoided. Among these is European Directive 90/269/CEE (29 May 1990, OJ 21 June 1990) which lays down health and safety guidelines relating to the manual handling of loads. This directive applies to activities which entail risks, notably dorsolumbar risks, such as lifting activities, pushing, pulling, or carrying a load. It is clear that such handling can also lead to strains on lower and upper limbs but this aspect of the matter will not be dealt with here.

### **Risk factors**

Manual handling can pose a risk to the lower back if:

the load is:

- too heavy
- too big
- difficult to grasp
- located too far from the person's torso
- is grasped by someone who twists his/her torso to do so

### **the effort needed:**

- is excessive
- requires a twisting of the torso
- unbalances the load
- requires the person to adopt an unstable position

### **the work environment is inadequate:**

- type of floor
- free space
- unfavourable climatic environment

### **the operation imposes other demands like:**

- prolonged activity with insufficient rest
- excessively long distances
- an excessively high rate of repetition

According to Directive 90/269/CEE, the employer has to minimise the manual handling of loads by his workers (Art. 4). In the event that handling is unavoidable, it is agreed:

- that the work must be evaluated (Art.5)
- that the risks must be reduced
- the work location must be properly fitted out and adapted (Art.6)
- that the worker must be informed and trained

## C Social and financial consequences

The social and financial consequences related to back injury are considerable in the healthcare sector, since back problems affect a third of workers in this sector.

People who suffer from lower back injury are made vulnerable (their livelihoods are threatened and they risk losing their jobs) and this can have consequences in their professional and/or private lives. Employers have to contend with the absence of ill workers who are sometimes difficult to replace given their specific qualifications. Moreover, lower back injury can lead to significant costs for the victim, his employer and for society as a whole.

### Summary

for the victim	for the employer	for society
- loss of revenue	- compensation	- care consumption
- loss of work	- pensions	- non-utilised knowledge
- loss of job opportunities	- loss of production	- loss of social cohesion
- living with pain	- additional training costs (of new workers to replace the specially qualified ill workers)	
- loss of social recognition linked to employment		
- reduced enjoyment of life		
- left to one's own devices		
- feeling a burden on society		

## 2 Lower back disorders

### A What can cause lower back disorders?

It is often difficult to pinpoint the origin of lower back disorders, given that they generally have multiple causes. That is why people refer to 'risk factors'.

These risk factors can be divided into categories:

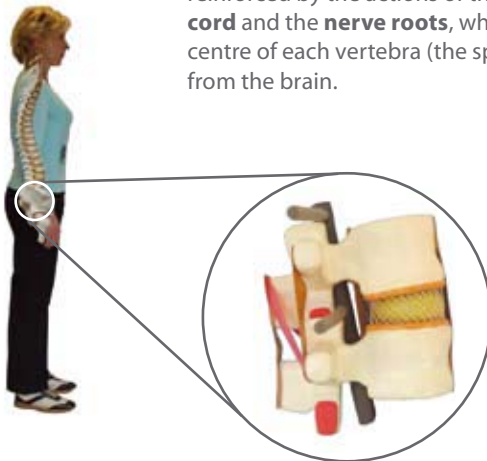
- individual factors:
  - age, sex, build, nicotine intake, inactive lifestyle,...
  - factors relating to the physical strenuousness of one's work
    - manual carrying and handling of loads;
    - frequent movements involving bending and twisting (notably of the torso);
    - static and/or prolonged positions;

To what extent do these risk factors cause back problems? To what extent is this the case in the healthcare sector?

### B What is the back made of?

#### 1. The parts of the spinal column

The column consists of 33 **vertebrae** and 24 **intervertebral discs**. The solidity of the column, which is guaranteed by the vertebrae, and its mobility, which is provided by the intervertebral discs, are reinforced by the actions of the muscles and **ligaments**. The **spinal cord** and the **nerve roots**, which are protected by a canal in the centre of each vertebra (the spinal canal), carry information to and from the brain.



## 2. The intervertebral discs

The intervertebral discs are crucial: not only do they act as shock-absorbers, they also play a major role in the spinal column's mobility. Their principal characteristics come in twos:

### a. two parts

The intervertebral disc is located between two vertebrae. The disc consists of two parts:

- on the inside: the nucleus, which is gelatinous,
- on the outside: the ring, which is a lattice of intersecting fibres which keep the nucleus in a central position.

The nucleus is shown in yellow (in the centre) and the outer fibrous ring is shown in black and orange



### b. two roles

- absorbs shocks: the disc, which can be compared to an inflated tyre, cushions and absorbs variations in pressure;



- facilitates movement: bending, stretching, turning ...



### c. two special features

- Very few nerve cells => therefore not very susceptible to deterioration at first

the green arrows correspond to the few nerve cells located on the back edge of the disc



- No blood vessels => the disc depends on movement for nourishment and for the elimination of toxins (acts like a sponge).

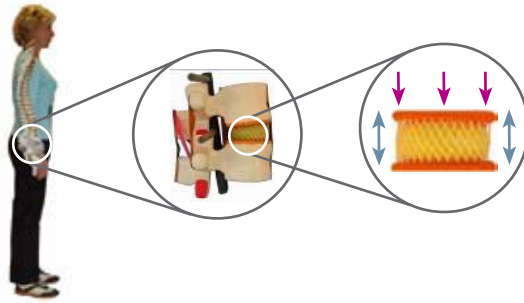


## C The causes of lower back disorders

The following are a number of examples, taken from the day-to-day work of a care provider, which constitute back risk factors.

### 1. The repetition or prolongation of certain positions and actions

The vertical standing position is the reference position:



It is in this position that the discs and ligaments suffer the least and most evenly distributed pressure and tension.

The movements and postures listed below are risk factors for the back – and in particular for the lowest discs in the lower back – if repeated frequently or maintained for prolonged periods of time.



#### a. Bending forwards (with a rounded back)

Excessive repetition of these movements can lead to ligament and disc lesions due to the following:

- unnatural arching of the back (rounded back)
- pinching at the front of the disc
- stretching of the posterior ligaments and the posterior part of the disc
- increase in pressure on the disc (leverage effect)



### **b. Turning to the side while bending forward**

This posture puts by far the greatest amount of stress on the back. It also produces the following effects on the spinal column and the discs in particular:

- unnatural arching of the back (rounded back)
- compression of the front and lateral part of the disc
- stretching of the posterior and lateral part of the disc (which are the most vulnerable)
- shearing of the ring's fibres
- increase in pressure on the disc (leverage effect)



### **c. Grasping the load while bending over backwards**

This posture has the following effects:

- excessive curving of the back
- compression of the posterior part of the disc and the posterior joints
- increase in pressure on the disc (leverage effect)



### **d. Sitting on a chair for long periods**

Sitting for long periods hampers the nourishment of the discs.



### e. Kneeling or squatting for long periods of time

This position is not only dangerous to your joints but is also tiring for your muscles and heart. Although you have to flex your knees to grasp a load on the ground, you should not bend them beyond 90°.

## 2. The risks related to handling

### a. The characteristics of the load

The weight of the load is the factor cited most often as a serious source of duress. Weights of 25kg for a man and 15kg for a woman are considered to be the maximum if lifted in the right position whilst located on an even surface.

Other characteristics can make the task even more difficult:

Characteristics related to the handling of an inert load	Characteristics related to the way the patient is carried
- instability of the load	- restlessness of the patient
- a weight with no apparent link to its volume	- a lack of patient participation
- unequal distribution of the weight	- difficulty estimating the patient's weight
- difficulty grasping/taking hold (absence of handles)	- possibility of reduced handholds
- sharpness, slipperiness or dirtiness of the surface of the load	

### b. Grasping distance

Of course, the way a load or patient is carried increases the pressure exerted on the intervertebral disc. The strain on the base of the spinal column depends on the distance of the load from the body when it is grasped. The principle is that of 'leverage': the greater the distance from the load, the more the torso is bent forwards, the more leverage is required and the greater the pressure.

### **3. A lack of physical activity**

Given that the nourishment of the intervertebral discs is linked to changes in position (sponge effect), movement plays a vital role in keeping the spinal column in good condition. Moreover, a good physical condition (toned, flexible musculature...) makes it easier to move in ways that protect the back.

## 3 Preventive solutions in the healthcare sector

As with any prevention plan, it is important to work in a systematic manner and to structure the approach.

### A Implementation of a prevention policy

The implementation of a policy to prevent lower back disorders can be broken down into three main phases: analysing the risks, searching for solutions and applying the specified preventive measures.

	What?	How?
<b>1st phase:</b> finding and analysing risk situations	are workers exposed to - painful positions? - the handling of loads? - the handling of patients?	- observe the work locations - gather information from workers, from the management, from the organisation's own health and safety team - analyse work-related accidents-> analyse the results
<b>2nd phase:</b> look for solutions	on the basis of the results obtained during the 1st phase, choose appropriate preventive measures to improve the situation	- are any preventive measures already being implemented? - choose the most appropriate solution according to the risk hierarchy: 1. Remove risks 2. Replace dangerous situations with less dangerous ones 3. Combat risks at the source
<b>3rd phase:</b> implementation	apply the solution in the field and monitor the situation for developments	- implement the measures and organise follow-up (information, instructions, training) - make sure the solution is being used - evaluate the measures (has the implementation had the expected effects, have any new risks appeared...?) - in the event that the work situation changes, carry out a new risk analysis (repeat the 1st phase, etc).

Every company evolves over the course of a number of years and it is certainly a good idea to carry out regular evaluations of the preventive measures to check whether they are still in line with the applicable prevention policy.

## B Choice of prevention measures

Action is required once the risks have been identified. How? By eliminating or reducing them. In the first instance, the focus must always be on measures which permit the elimination of the risks.

The following is a summary table of possible preventive measures:

Type of preventive activity	What?	How?
Elimination of the risk	Avoid manual handling	Complete mechanisation or automation
Reduction of the risk	Mechanical devices	Use a lift, a body support system
	Change the height	Bed, bath, etc
	Patient transfer devices	Sliding sheets, transfer boards, turning discs, transfer slings, etc
	Improve load storage	Store frequently used/ heavy loads at waist height
	Enhance accessibility	Stair lift,...
	Organisational measures	Work planning, alternating activities, improved distribution of tasks,...

### 1. Elimination of the risk

One of the best preventive approaches is to eliminate the risk by avoiding direct exposure of workers to the risk and therefore to avoid manual handling. This implies the complete mechanisation or automation of the handling task.

The handling of people in a hospital environment makes this difficult to implement. It is also imperative to take patient dignity into account.



Body support systems



The number of patient transfers (bed-chair, bed-stretcher, bed-bath,...) affects the back-related risk factors primarily due to the weight of patients, the postures adopted, etc. Risky manual handling can be avoided by using a lift or transfer rails.

Transfer rails



## 2. Reduction of the risk

### a. Technical measures (mechanical aids)

Technical aids such as height-adjustable beds, transfer boards, trolleys, ... make the handling task easier. They allow the reduction – or even elimination – of risks associated with handling.

#### (1) Changing heights

##### - Height-adjustable beds and baths

Devices like these enable care providers to avoid postures which might cause back pain, particularly bending over forwards. They also make handling easier when transferring patients.



Height-adjustable bed



Height-adjustable bath

##### - Changing the height of the worktop according to the activity

In order to avoid postures which might cause back pain, such as bending over forwards or bending/rotating of the torso, it is necessary to change the height of the worktop in accordance with the type of work carried out.



Adapt the height of the worktop according to the activity



Trolley adapted to writing height

## (2) Make it easier to move patients

Most back problems experienced by workers in the healthcare sector occur when care personnel support or lift a patient in order to transfer him or her from one location to another (bed-bed, bed-chair,...).

There are plenty of technical aids which make it easier to move patients and therefore reduce the burden placed on workers' backs. The following are a few examples:

### - Sliding sheets

These sheets, which are made of sturdy, low-friction material allow patients who are confined to their beds to be raised, shifted or simply repositioned by sliding instead of lifting.



sheets which can be used to raise patients

### - Transfer boards

These boards, which are covered in slippery fabric or which are made from slippery material, enable patients to be transferred from one bed to another, from a bed to a chair or to a wheelchair by sliding rather than lifting.



bed-bed transfer board



chair-bed or chair-chair transfer board



vehicle-wheelchair transfer board



### - Rota stands

These technical aids help with raising and moving patients, allowing as much independent movement as possible.



Rota stand



chair transporter

### - Turning disc

Transferring patients from a bed to a chair or a wheelchair often requires considerable effort on the part of the patient. This type of device makes it easier to move the person while taking account of their physical capacities and also reducing the effort required to support them.

There are similar discs which make it easier to enter or exit a vehicle.



turning disc to help patient rotation when seated



rotating floor disc



a disc which makes it easier to exit a vehicle



stair lift

## (3) Enhance accessibility

### - Wheelchair stair lift

In non-hospital locations, accessibility to upper floors is often only possible via stairs, partly because lifts are often too narrow. Stair lifts make it possible for people in wheelchairs to use stairs.



height-adjustable arm rests

### - Adjustable chairs

The presence of arm rests often makes it difficult for people to sit down and forces care workers to perform awkward manual handling operations. A chair with arm rests which can be lowered is particularly useful in combination with a transfer board.

### 3. Improve load storage

A balanced distribution of loads in storage areas prevents overloading of the spinal column and facilitates access to the storage areas.



source: HSE

The weights shown may even have to be reduced depending on the circumstances, the frequency of handling and the individual.

More information on this model can be found at: [www.handlingloads.eu](http://www.handlingloads.eu)

### 4. Organisational measures

Work planning, the alternating of activities and the improved distribution of tasks are all work organisational measures which allow a reduction in the risks.

Adjustments to the work environment, also referred to as 'ergonomics', covers changes to furniture, materials and the way the work is organised. These changes are, of course, not always easy to implement. In the context of home care, for example, the working conditions encountered by the service providers depend largely on the fittings and fixtures already in the home and the willingness and/or financial means of the care recipients.

That is why it is important for the care provider to look after his/her body and move carefully and adopt postures which are not harmful to the back.

Likewise, employers can give workers the chance to engage in sport at work (fitness room, showers,...) or encourage them to play sport outside the workplace (a contribution to the costs of sporting activities,...). Employers can also encourage workers to use bicycles or walk to work.

## Summary

The process is as follows:

### a. Identify and evaluate the risks

To do this it is necessary to analyse:

- the work process (what does a worker do at his/her workplace?)
- the working methods (how do workers carry out the tasks assigned to them?)
- the risks, their causes and effects (what can provoke work-related accidents or lead to work-related illnesses?).

### b. Remove or reduce the risk:

- Minimise manual handling activities
- Provide mechanical aids and ergonomic solutions

### c. Manage the remaining risks

- Inform workers and their representatives about risks
- Train workers to ensure they are better protected
- Change the way the work is organised in order to reduce the duration and/or intensity of workers' exposure to the risks
- Prevent other risk factors which might play a role
- Evaluate the health of your workers
- Review the risk analysis according to (possible) changes in the work situation.



[www.handlingloads.eu](http://www.handlingloads.eu)



National Authority

Health and Safety Executive for Northern Ireland  
83 Ladas Drive  
Belfast  
BT6 9FR



Phone (028) 9024 3249



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