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*Section on Prevention of Occupational Risks in Health Services*

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## **Recommendations for the prevention of back pain in healthcare activities**

from the workshop “Basic principles for the prevention of back pain in healthcare professions” (Dresden, 25-27 January 2006)

edited by the Ergonomics working group of the ISSA Section on Prevention of Occupational Risks in Health Services (Hamburg, July 2012)

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## Introduction

The International Social Security Association (ISSA) has over 350 members (social security bodies and institutions) in 150 countries. Its headquarters is located in Geneva at the International Labour Office (ILO). In order to promote occupational safety and health, a major component of its activities, ISSA set up international sections for the prevention of occupational risks targeting specific professional sectors and fields of action.

The ISSA Section on Prevention of Occupational Risks in Health Services is coordinated by the German institution for statutory accident insurance and prevention in the health and welfare services (BGW, Hamburg). Over the last few years, the Ergonomics working group of the ISSA Health Services Section has mostly addressed the prevention of back problems in healthcare professions.

In 1998 in Hamburg, the working group held its first international event on the epidemiological data and sociopolitical aspects pertaining to lower back pain, as well as the assessment and prevention of risks.

In 2002, an experts' workshop in Paris provided the opportunity to representatives from eight European countries to present thirteen approaches to training in the prevention of back problems in healthcare activities.

The Ergonomics working group then set out to define basic principles for the prevention of back problems in healthcare professions and issue recommendations based on those principles. In 2006 an international workshop in Dresden brought together 50 experts from 12 European countries. For each of the five topics addressed – General principles, Designing and redesigning facilities, Technical aspects, Organisational aspects, Basic and continuing training – brainstorming groups were created.

The proposals of these groups, presented in plenary session, were analysed and edited by the experts. On this basis, the Ergonomics working group of the Health Services Section continued its brainstorming on the different topics.

This work led to prevention recommendations stemming from broad consensus among the experts. These recommendations, structured around the five brainstorming topics selected, are presented hereafter in a contextualised form, enabling readers to trace the progress of the experts.

The ISSA Section on Prevention of Occupational Risks in Health Services hopes that these recommendations will be applied extensively and contribute effectively to the prevention of back problems, to which healthcare professions are particularly exposed. To that end, it is essential for them to be applied as part of an overall prevention approach integrated into the culture of the institution.

These recommendations are not of a regulatory or prescriptive nature. They are a reference for OSH specialists, business leaders, employees and social partners, and provide support for all those who wish to improve prevention of back problems in healthcare workers by dealing with the causes and not only the consequences of the problem.

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**Working groups at the international experts workshop “Basic principles for the prevention of back pain in healthcare professions” (Dresden, 25-27 January 2006)**

<b>Working group</b>	<b>Participants</b>
<p><b>1. Basic principles for the prevention of back pain during patient handling</b></p> <p>Moderator: Jean-Pierre Meyer</p>	<p>Barbara-Beate Beck, Rolf Ellegast, Sonja Freitag, Brigitta Hasslauer-Grosskopf, Zdenek Guran, Enrico Occhipinti, Lothar Urbas, Norbert Wortmann</p>
<p><b>2. Recommendations for the prevention of back pain when designing or redesigning health and care facilities</b></p> <p>Moderator: Yves Gary</p>	<p>Daniel Briand, Thomas Guthknecht, Hubertus von Schwarzkopf, Katja Schwenk, Susanne Stangenberger, Christian Trontin, Jean-Pierre Zana</p>
<p><b>3. Technical aspects of prevention</b></p> <p>Moderator: Frank Haamann</p>	<p>Sadrina Benbouali, Stefan Kuhn, Martina Michaelis, Dimitrious Proussas, Alexandra Theiler, Beate Wiedmann</p>
<p><b>4. Organisational aspects of prevention</b></p> <p>Moderator: Irene Kunz-Vondracek</p>	<p>Jürgen Brückner, Marie-Line Lepori, Philippe Mairiaux, Peter Pils, Michael Ramm, Christian Sepieter</p>
<p><b>5. Recommendations for basic and continuing training in back-protecting work practices in healthcare</b></p> <p>Moderator: Wolfgang Meier</p>	<p>Johannes Anema, Philippe Bielec, Eric Daneels, Sylva Gilbertová, Paul Guenoun, Sue Hignett, Nico Knibbe, Monica Lagerström, Joël Lecomte, Per Halvor Lunde, Rosemary Rodgers, Kristien Selis, Leena Tamminen-Peter</p>

# **I. Basic principles for the prevention of back pain during patient handling**

## **(Working group 1 during the workshop)**

Healthcare workers are exposed to high work-related physical stress which combines many risk factors of locomotor apparatus disorders. Patient handling is an especially stressful task, as much mentally as physically. The working group has formulated five major recommendations for healthcare workers:

- analyse and assess each situation from the point of view of physical constraints
- give priority to the safety of the patient and care worker
- use handling aids
- mobilise the patient's own resources
- keep up one's expertise (know-how) and physical fitness
- wear appropriate clothing and footwear

### **1. Analyse and assess each situation from the point of view of physical constraints**

Systematic assessment by the healthcare worker of risks related to biomechanical stress during care activities is a key part of efficient prevention. This assessment, which must become an automatic part of the process, is based on the following elements:

- the expertise and capabilities of the healthcare worker
- the physical condition and fitness of the healthcare worker
- the patient's degree of mobility, weight and illness
- the patient's cooperation
- layout of premises
- available handling aids
- the care operation to be performed

The healthcare worker must learn to identify and assess risks, for example, by establishing a list of tasks conducted, assessing the level of risk involved and the frequency at which each task must be conducted.

Tasks or situations entailing risk are, for example, lifting a patient, pushing beds or laundry carts, physical exertion in restricted spaces, maintaining an uncomfortable posture, etc. These risks are compounded by the following factors:

- "stressful" situations, time pressure,
- impossibility of being assisted by peers,
- unsuitable, unknown or unavailable technical aids,
- poor lighting,
- slippery, cluttered or uneven floors,
- wearing of inappropriate footwear,
- ...

Before each handling operation, healthcare workers must think of ways of reducing the physical stress and adopt a method in line with that goal. To do so, they must know their own

limits. They must also assess the effectiveness of their strategy afterwards and modify it if necessary. Sharing work methods with colleagues enables these methods to be improved.

**Recommendation:**

For all care operations, healthcare workers must assess the risks related to physical constraints. Before each patient handling operation, they must think of the best way of reducing the risks and the most suitable work method taking into account in particular their personal limits. They must assess the effectiveness of the method afterwards and modify it if necessary. Sharing work methods with colleagues enables these methods to be improved.

**2. Give priority to the safety of the patient and healthcare worker**

A series of care and therapeutic actions maintains and stimulates the patient's resources. They are however based primarily on the development of the patient's state of health and can only complement and not replace ergonomic work methods. In all care activities, the safety of the healthcare worker and the patient, that is, the consideration of the ergonomic and biomechanical aspects and the use of the technical aids, takes precedence over the objectives of stimulating the patient's resources.

**Recommendation:**

The safety of the health worker and patient must always take precedence over the objectives of stimulating the patient's resources during care activities.

**3. Use handling aids rather than physical strength**

Biomechanical stress during patient handling is such that handling aids must be used in a great many situations to ensure that the forces acting upon the lower back do not reach known risk levels. The handling procedure, decided at the risk assessment phase, must identify whether there is a need for aid to be used or requested, and if so what type of aid.

**Recommendation:**

As a rule, if it is not possible to eliminate risks during a care activity, technical aids must be used.

**4. Mobilise the patient's own resources**

Stimulating the patient's capabilities is an integral part of caring. A healthcare worker who knows and uses the patient's physical, mental and psychological capabilities helps the patient to remain active. Patient stimulation is therefore part of the care process and reduces the biomechanical stress on the healthcare worker's locomotor apparatus (back, shoulders, legs, etc.).

Lastly, this form of joint mobilisation of the patient and the healthcare worker reduces the risk of accident during the operation (such as a fall or injury for the patient, sudden or rough movements for the healthcare worker) and makes it easier to select the handling aids.

**Recommendation:**

Healthcare workers must know, use and stimulate the patient's physical, mental and psychological resources in order to reduce stress on themselves.

**5. Keep up one's expertise (know-how) and physical fitness**

The healthcare worker profession is physically demanding. In order to do the best possible job and minimise the risks to their health, healthcare workers must keep up their technical expertise and know-how by receiving the appropriate training. It is also important for them to maintain their physical abilities by practising a physical activity regularly. They must receive training in the use of handling aids, the methods that can be used to boost patient capabilities, and ways of handling patients and loads safely. "Look after yourself, take time out for yourself. Relax, and get some exercise" could be considered the basic precept for all healthcare workers. For this to actually happen, the authorities and decision-makers in healthcare need to make a greater effort in training and organisation of work.

**Recommendation:**

Healthcare workers must keep up their expertise and know-how as well as their physical and mental fitness.

**6. Wear appropriate clothing and footwear**

The prevention of back pain during care activities requires healthcare workers to wear appropriate work clothes. Healthcare workers move about a lot and often get into stressful positions (bending, rotation of the upper body, arms raised, crouching, etc.), sometimes for quite a long time. Clothing, while complying with hygiene requirements, must not hinder the healthcare worker's movements and postures. Healthcare workers often work standing up, move around a lot, sometimes in emergency situations, lift loads, etc. The choice of footwear is therefore especially important, as it must provide the healthcare worker with both comfort and stability (anti-slip soles, closed shoes keeping the foot positioned properly).

**Recommendation:**

Healthcare workers must wear clothes that do not hinder their movement, and stable shoes that keep the feet well-positioned in order to reduce the risks of back pain and slips.

## **II. Recommendations for the prevention of back pain when designing or re-designing health and care facilities**

### **(Working group 2 during the workshop)**

Considerable investments are made in many countries in the buildings used by healthcare establishments of all kinds. Public and private hospitals, retirement homes and functional rehabilitation centres all have to adjust their capacity to the needs of the population, or carry out improvements to comply with health and safety standards within a general risk management policy. Such designing or re-designing work offers a real opportunity for improving staff working conditions, given that it is easier and cheaper to modify plans or select the right material at the design stage than to knock down walls or rebuild an installation later.

Architectural choices are of particular importance for the prevention of back pain, as they can help reduce the physical and stress loads on healthcare personnel, and these are two recognised risk factors of this disease.

These choices must make it possible to avoid occupational accidents and diseases, maintain the employability of the healthcare staff in their profession up to retirement age and facilitate the organisation of high quality healthcare.

With a view to promoting the prevention of back pain in healthcare staff when facilities are being designed or modified, the ISSA Health Services Section has drafted the following recommendations:

### **Programme and specifications**

The specifications or general design guidelines used for any construction, enlargement or modification works in healthcare establishments must take account of ergonomics and the quality of working conditions. In particular there must be an assessment of the impact of architectural choices on the physical and psychological loads of the healthcare staff.

### **Recommendation:**

The project owner must make the project's ergonomic requirements clear from the start of the construction programme.

## Consultation

The designer must check the overall consistency of the architectural and environmental choices (ventilation and air-conditioning systems, aesthetics, acoustics, odour control, etc.), with the operational processes performed on the future premises. To achieve this, the project owner must provide the designer with a description of such processes drawn up by the medical and healthcare staff as future users, along with an assessment of the known or potential risks relating to these processes.

The proposed solutions must be submitted for opinion to the future users of the premises: the healthcare professionals and doctors. Simulations, whether through micro-implantations, mock-ups, in situ models or 3D methods, can be used to reach agreement through an iterative process involving the designer, the project owner and the users.

Planning on the basis of standardised nursing units is too rigid an approach to adequately take account of all potential situations: different types of patient, disease, available equipment, caregivers, techniques and organisational systems. It is therefore preferable to define basic modules that can then be adapted to respond efficiently and effectively to the wide range of actual situations encountered.

In many countries, it is compulsory to consult staff or their representatives regarding any future changes to the working premises. In order for these persons to contribute more effective analyses and proposals, it is recommended that they be given appropriate training (e.g. how to read plans, basic principles of ergonomics, etc.).

## Recommendation:

There must be extensive consultation of the future users as of the design phase.

## Design of critical areas

**patients' rooms and toilets** must be designed in such a way as to allow for easy use of handling aids and application of patient handling techniques.

**storage spaces** must be of a size and location that allow for easy use of equipment, in particular handling aids.

**corridors and lifts** must allow for easy movement of trolleys, stretchers, wheelchairs, beds and other wheel-mounted equipment. All level changes must be via ramps.

**the central zone:** different areas must be designed to allow for easy communication and good relationships within the healthcare team, and also with patients and their families. It is a place where people live and work and that should be comfortable, functional and safe.

**Recommendation:**

To prevent back pain in healthcare staff, designers of healthcare premises must pay particular attention to the layout of certain critical areas, such as rooms, storage spaces, corridors and lifts and the central zone.

**Continuous assessment and improvement**

Construction work is frequently carried out in healthcare establishments – whether new works, renovation or enlargement. Such situations mean that each project can be used as part of a process of continuous improvement. It is therefore recommended that the results of each operation be evaluated using a scoreboard or set of criteria. These should in particular include the investment and operating costs, the possibility of future adaptations, user satisfaction (patients and healthcare staff), along with any difficulties or advantages identified in terms of the organisation of work and the use of technical equipment. A comparison can be made of the frequency of accidents, incidents and absenteeism before and after the changes, which is a key factor in assessing the project's success.

**Recommendation:**

An assessment must be made after implementation of any changes as part of the continuous improvement of working conditions.

### III. Technical aspects of prevention

#### (Working group 3 during the workshop)

One of the main factors in the technical aspects of prevention of back pain is the use of handling aids. There are two types of handling aids: *mechanical handling aids* and *small handling aids*.

Mechanical handling aids include electrically adjustable beds, wheelchairs, hoists (floor-based, ceiling-mounted or wall-mounted), etc.

Small handling aids include anti-slip mats, sliding mats, transfer boards, transfer belts, roll boards, etc.

#### 1. The importance of aids for lifting and/or positioning patients

- a.) Given that, because of their own body weight, every adult individual is a “heavy” load, the less mobile the patient is, the more necessary it is to use handling aids. The way they are used however must be an integral part of the culture of the organisation and its approach to caring. What is required is a holistic concept integrating patient-handling both from the standpoint of occupational safety and health (back-protecting working methods) and care or therapy concepts (kinesthetics, Bobath, etc.)

##### **Recommendation:**

Handling aids are indispensable for healthcare workers, therapists and patients and are part of a comprehensive prevention system.

- b.) Employers must provide employees with a sufficient number and variety of handling aids in order to guarantee that they will be readily available where and when they are needed. Beds, hoists, wheelchairs, etc. must be compatible with each other, and more especially, they must be designed in such a way as to provide sufficient clearance below and around them. Regular training in handling aids is required to ensure that they are used appropriately. Such instruction must reach all members of staff, including new employees (employers have an obligation to provide training). Lastly, the choice and utilisation of handling aids must be adapted to the patients, the healthcare workers and the working situation.

**Recommendation:** There must be an adequate quantity and choice of handling aids available. The healthcare workers must know how to use them safely.

#### 2. Improving acceptance of handling aids

Three types of arguments may be used to achieve greater acceptance by the entire staff:

- a) *Arguments addressing employers/superiors*  
**Improving the acceptance of handling aids is first and foremost a management responsibility.**



In this respect, it is important for management to know that there are regulatory texts on handling aids. For example, European regulation on the manual handling of loads requires handling aids to be made available. The use of aids also makes business sense since they help to reduce the number of days lost due to people “putting their back out”, having back complaints or accidents, and thus the overall time lost for health reasons. Healthcare workers’ health is better protected. All employee categories should be involved in the development of prevention concepts and in decision-making processes, so as to enhance acceptance of handling aids. Lastly, aids also improve patients’ safety and promote their mobility.

b) *Arguments addressing healthcare workers:*

The main argument in favour of the use of handling aids is that they protect the health of both caregiver and patient and can even help improve it. Purely manual transfers are inherently unsafe simply because the general conditions (the state of fitness or health of the healthcare worker and the patient) cannot be accurately determined. For all tasks carried out by the healthcare worker without assistance, the use of aids is essential in ensuring safety. Aids considerably expand the scope for healthcare workers to do their job. With the use of aids, tasks can perhaps be performed by a single worker; they therefore have an impact on economics. In addition, the proper application of aids reduces the risk of bed sores by avoiding shear loads on the skin. The use of handling aids is also to be recommended for reasons of pain prophylaxis, in that with the appropriate aids a transfer or care procedure can be performed safely and comfortably without stressing either the patient or the caregiver, and without any rough pulling or dragging of the patient.

c) *Prerequisites for the use of handling aids*

It is easier to make appropriate use of aids if they are readily available on the spot. One of the most effective ways of ensuring that staff continues to use aids is to provide them with regular instruction in their use, particularly during their initial training. It is equally important that there be adequate space to use them, in the patient’s room, bathroom or toilet. If the requirements involved in the use of handling aids is a factor that is taken into account when tasks are being planned, this has a positive influence on the acceptance and proper use of such aids. But this presupposes their being available in sufficient number and variety. Ideally there should be staff members responsible for handling aids present on the wards that could assist their colleagues in their use.

**Recommendation:**

The prerequisites that enable acceptance, appropriate and safe use of handling aids must be guaranteed.

### **3. Requirements for mechanical and small handling aids**

a.) *Beds*

In order to ensure that patient positioning or transfer is performed at the optimum working height (from less than 40cm for wheelchairs to above 90cm for tasks in the standing position), a height-adjustable bed is a basic prerequisite. The adjustment system should be electrically, or at least hydraulically, powered. Because of the heavy

loads involved in adjusting the head of the bed, especially with the patient, at the very least this function should be electrically powered. Other features of optimum bed design are:

- wheels adjustable to floor surface
- possibility of setting wheels in straight line position for pushing beds
- centrally controlled brake
- (electrical) knee break adjustment
- foot of bed and overall angle of bed (electrically) adjustable
- side rails in two sections, stowable under the mattress

**Recommendation:**

Beds that can be electrically, or at least hydraulically adjusted, with an electrically adjustable head are the basis of any ergonomically efficient care.

*b.) Hoists*

Hoists should be selected according to the type of transfer or positioning to be performed (bed change, going to the toilet, etc.). **Each ward should have at least one mobile hoist, for helping up patients who have fallen over for example.** Ceiling-mounted are preferable to floor-based systems, as they are always available and accessible. As patients can be of very different sizes and suffer from very different conditions, there must be a sufficient number of different sizes of harnesses and straps. In addition, for activities such as bathing and going to the toilet, etc, a range of different types of equipment and straps is required.

**Recommendation:**

Whenever possible, lifting should be avoided. If lifting is the only solution, a hoist must be used.

*c.) Small handling aids*

There is a very wide range of small aids. For product liability reasons, only certified (e.g. CE certified) aids should be used. Healthcare workers should be given appropriate training in the use of these aids to ensure that they are specifically selected for the intended patient transfer or positioning and for the assistance that the patient requires. A combination of different small aids is also possible.

**The minimum requirement in each ward should be determined by the care needs. In all cases however, the basic equipment for each ward should include two of the following: anti-slip mat, sliding mat, transfer board and transfer belt.**

For bed-to-bed transfers, either a hoist or a transfer board should be used.

**Recommendation:**

Small handling aids support patient mobility and thus effectively reduce loads on healthcare workers.

#### **4. Use of handling aids**

The evaluation of whether it is appropriate to use a handling aid depends very much on the situation and the patient's ability to cooperate.

The need to use a handling aid increases when:

- the patient's mobility is restricted
- the patient's resources are limited
- the surrounding working conditions (room, height difference, etc.) are unfavourable
- age or other factors affect staff performance.

## IV. Organisational aspects of prevention

(Working group 4 during the workshop)

### Background

In many cases, healthcare establishments and other care institutions have no properly defined prevention system in the field of ergonomics. While they generally have certain notions of ergonomics, they do not have any kind of overall concept driving implementation, which remains patchy.

The main reason for this is the absence of awareness at senior management level of the need for the implementation of a prevention system in the area of ergonomics. The result is that no specific goals are defined and therefore no process for such a prevention system exists, despite the fact that in most European countries, legislation and regulations have been developed that could provide management with a basis for implementation of such systems.

### The organisation of prevention systems in the field of ergonomics

The European working group of the Dresden Workshop addressing organisational aspects proposed the following measures to ensure that prevention in the field of ergonomics is made an integral part of hospitals and other care institutions.

1. A prevention system in the field of ergonomics can only be designed and effectively implemented in hospitals and other care institutions if it is recognised at the highest management level (i.e. clinical manager or general manager) as being, in the context of employee health and safety, an integral and necessary part of corporate culture, and if targets for its implementation are consequently set at that level. In practical terms, the prevention of back problems as part of occupational safety and health should be written into the **mission statement** of any healthcare establishment and a prevention process should be defined in the field of ergonomics.

### Recommendation:

A process must be defined for prevention in the field of ergonomics. In particular, the prevention of back problems as part of occupational health and safety must be written into the mission statement of all healthcare establishments.

2. In order to achieve rapid, efficient and cost-effective integration and implementation, responsibility for the process should be placed in the hands of an existing department (creation of a staff function). The most appropriate choice would be the risk and quality management departments that usually already exist. Those working in this field normally have the necessary know-how available, for example **risk analysis and assessment tools** and already have a network of contacts with the various target groups.

**Recommendation:**

A staff function should be set up under risk and quality management to take responsibility for the process.

3. Prevention in the field of ergonomics in healthcare establishments must focus on ensuring a comprehensive approach to all working processes throughout the establishment. The process must therefore be applied to all areas and departments in the same way. This means that individual areas and departments must not be seen in isolation, but the hospital or clinic must be viewed as a single entity – from patient registration through the various departments, special clinical disciplines and laboratories, to physiotherapy along with supporting infrastructure, such as technical departments, etc. Interfaces between departments must be organised in such a way that there is no extra physical stress generated on either side of it by the transfer of patients or other loads.

Particular attention must be paid to special disciplines or departments such as A&E (accident and emergency) or the operating theatre.

**Recommendation:**

The process of prevention in ergonomics must be applied to all areas and departments in the same way. The special needs of A&E and the operating theatre must also be given particular attention.

4. An analysis should be made of the **organisational structure** of the establishment from an ergonomics viewpoint (ergonomic risk assessment), and **working procedures** should be ergonomically redesigned. In some cases, these organisational measures will lead to changes in structure(s) and/or procedures. These procedures must be framed so that there is enough time provided to work in a way that is ergonomic and above all back-protecting.

**Staffing levels and ratios** should be drawn up accordingly. Duty rosters should always ensure that a sufficient number of staff is available.

**Recommendation:**

An assessment of ergonomic risks should be carried out in all functional units. When necessary, organisational structures and working procedures should be adapted to allow for **organisational development. Staffing levels, ratios and duty rosters should be drawn up accordingly.**

5. In order to make a comprehensive analysis of the structure and procedures in the establishment as a whole, the process to be defined must be broken down into sub-processes and addressed in separate projects. The scope of the project means that **project-based management** must be implemented. **Project development** and **project management** should be placed under the responsibility of the risk and quality management department. The aim is to bring together the various sub-tasks that belong together organisationally and make sure that the requirements of the different stakeholders are compatible. The process structure must be defined within the framework of **participatory management**, associating the stakeholders concerned and involving

experts such as safety engineers, occupational physicians, HR managers and staff representatives.

**Recommendation:**

Once structure and procedures have been analysed, the process to be defined must be broken down into separate processes and addressed in separate projects that include experts within the framework of **participative management**. **Project development** and **project management** must be placed under the responsibility of the risk and quality management department.

6. Specialised ergonomics expertise is required in order to carry out an ergonomic analysis of structure and procedures. If such expertise is not available in-house, qualified ergonomics specialists must be brought in from outside.

**Recommendation:**

The ergonomics risk analysis must be performed by a specialist.

7. There is a need for staff that has been properly trained in ergonomics to implement and supervise the process of prevention in the field of ergonomics in hospitals and other healthcare establishments.

An analysis should be made of the level of **employee qualification** in terms of their knowledge and application of ergonomics. Current experience tends to suggest that there is a need for **staff development** and **training** in ergonomics. Sometimes it is necessary to bring in staff trained in ergonomics from the outside.

Particular attention is to be paid to the training of **temporary staff and beginners**.

**Recommendation:**

Staff must be given training in ergonomics where necessary. Particular attention is to be paid to temporary staff.

8. Expertise in ergonomics should be integrated into the area of occupational health and safety, because the **tools for risk analysis and assessment** are already known and used there.

Wherever possible, staff members with a good knowledge of the procedures used in the department or establishment and/or those that are already responsible for supervising other risks should be given instruction in ergonomics or be trained as multipliers. It is always preferable to use existing structures or networks.

Through regular meetings of these “risk scouts” and regular reporting to the person in charge of the process a network can be created across departments and information can flow both top down and bottom up.

**Recommendation:**

Training multipliers or ergonomics officers plus regular reporting will ensure the creation of a network across all departments.

9. In order to continuously improve the process of prevention in the field of ergonomics in hospitals and other care institutions, internal criteria and indicators must be defined and monitored – in the same way as indicators have been developed for risk analysis. This is a task that can usually only be performed on an interdisciplinary basis.

Regular meetings of the risk scouts (ergonomics officers) from all departments and regular reporting to the person in charge of the process are key factors in guaranteeing the goals will be achieved.

**Recommendation:**

For the process of prevention in the field of ergonomics, internal criteria and indicators must be defined and regularly monitored.

10. An analysis of structures and procedures must include an examination of the existing material conditions, e.g. the design and layout of buildings and rooms, equipment and technical aids and the maintenance of apparatus. Any necessary adjustments should be made.

As far as possible, only equipment that reduces the level of physical exertion should be used. Particular attention needs to be paid to equipment maintenance, as poor maintenance leads to higher levels of physical exertion.

**Recommendation:**

Optimum **material conditions** constitute an essential factor in the ergonomic design of structures and procedures.

11. Financial resources must be provided for the planning of prevention in the field of ergonomics, as well as for its implementation and upkeep.

**Recommendation:**

To allow for effective prevention in the field of ergonomics, sufficient financial resources must be provided.

## **V. Recommendations for basic and continuing training in back-protecting work practices in healthcare**

### **(Working group 5 during the workshop)**

#### **Directives, legislation and standards**

In the European Union Member States and several other European countries, manual handling of loads is regulated by law. With the transposition of Directives 269/90 and 626/94 in particular, basic and continuing training in back-protecting work practices in healthcare has been given a national legal framework.

While some countries have developed guidelines and official handbooks, in other countries specific training methods have evolved more or less to a standard.

Based on the result of a workshop with 13 experts, the Ergonomics Working Group of the ISSA Health Services Section recommended the following as far as training is concerned:

#### **1. General framework and prerequisites**

Training can only be effective if it is integrated into the safety culture of the organisation. The management (including physicians) plays an important role in making and implementing decisions on the matter.

- Risk assessment is fundamental for ensuring the effectiveness of prevention actions.
- Measures regarding the design of premises and their equipment as well as organisational measures have priority over healthcare worker training measures.
- Management and middle management should also be trained. Other professional groups, e.g. physical therapists must also be involved.
- The trainer should be involved in the introduction and use of technical aids for patient handling.
- Technical training is not sufficient; the healthcare worker should be rendered capable of developing and implementing solutions depending on the situation.

#### **Recommendation:**

Training must be integrated into the safety culture of the organisation. Risk assessment is a fundamental prerequisite.

#### **2. Trainers' influence on the management**

To convince the management of the importance of the training, the trainers must have solid knowledge of factors that may influence decision-making:

Negative factors:

- Cost of training



- Time consumption
- Investment in staff

In addition, if the training is exclusively centred on the safety of the healthcare workers and leads those workers to refuse all lifting, this can result in lower quality of care and even law suits in extreme cases.

Positive factors:

The following arguments can convince the management of the importance of training:

- Reduced physical load for the healthcare worker
- Increased safety for the healthcare worker / prevention of lumbar disk disorders and risks
- Positive cost-benefit analysis
- Positive return on investment
- Improved quality of care
- Less risk for the patients
- Less risks due to increased work satisfaction
- Less turnover, easier recruitment of personnel
- Reduced absenteeism (in particular sickness absenteeism)
- Improved productivity
- Optimal choice and use of handling aids for which training has been provided

**Training success should be assessed as follows:**

Quantitatively,

- by reduced absenteeism/sickness absenteeism
- by the drop in the number of accidents and incidents

Qualitatively (subjective data relating to the following),

- work satisfaction
- lighter tasks
- lighter loads
- reduced pain and complaints
- patient satisfaction

**Recommended assessment tools include:**

- follow-ups, monitoring systems and questionnaire surveys
- audits, exit interviews

**Recommendation:**

To convince the management of the importance of training in the prevention of back pain in care activities, the trainers must be able to provide well-grounded arguments on the costs and benefits of this training.

The success of the training should be measured quantitatively and qualitatively.

### **3. Integrating training into a global approach**

In order for the training to be successful, the trainer must know and take into account the training level of healthcare workers and their workplace environment.

Multipliers at different levels are recommended so that acquired knowledge is implemented.

#### **Recommendation:**

The trainer must know the training level of the healthcare workers and their workplace environment. Multipliers are required in the field so that acquired knowledge is implemented.

### **4. Elements in basic and continuing training**

#### **Recommendation:**

The training should include the following five principles:

- Risk analysis methods related to the healthcare situation (task, patient, environment, technical aids)
- Methods of preventing back pain in care activities and the use of technical aids
- Problem-solving techniques (particularly to deal with difficult patient handling situations)
- Analysis and mobilisation of patients' and healthcare workers' psycho-motor capabilities
- Continuing professional development and adaptation to the work environment

#### **The initial training should provide knowledge about:**

- Risks for the musculoskeletal system
- The functioning of the human body (anatomy, physiology, fitness, etc.)
- General principles of ergonomics and biomechanics
- Fundamental principles of back protection in healthcare

#### **The initial training should enable the healthcare worker to:**

- Analyse work situations and assess risks
- Choose and use appropriate technical aids for patient handling
- Follow basic ergonomic principles
- Manage patient-handling tasks in a way that ensures the safety of the healthcare worker and the patient

#### **Recommendation:**

The initial training should enable healthcare workers to acquire the basics in back protection during care activities and the necessary skills for handling patients safely while protecting themselves.

As long as the above-mentioned knowledge and skills have been provided during initial training – if not, continuing training must be adapted to initial training - **the continuing training should include:**

- Brush-up, consolidation and extension of the knowledge and skills acquired during basic training
- Risk assessment and task analysis in real situations
- Prevention of back pain in real situations
- Adaptation of technical aids to specific needs
- Development of problem-solving skills (work in particularly difficult or unusual conditions)
- Continuing professional development (should be integrated into the corporate safety culture. Regional or country-specific cultural differences should be considered.)

**Recommendation:**

The continuing training should include brush-up, consolidation and extension of basic knowledge and skills as well as problem-solving competence development. It should be part of a continuing professional development process.

**The main lessons conveyed in manual patient handling training should be to:**

- avoid vertical lifting and horizontal shifting without technical aids
- understand the advantages of gliding
- balance weight instead of lifting and pulling
- use technical aids
- establish verbal communication with the patient
- analyse the patient's resources

**Recommendation:**

In order to avoid vertical lifting and shifting without handling aids, the training must stress the need to use technical aids as well as the patient's resources.

## **Summary of recommendations**

### **I. Basic principles for the prevention of back pain during patient handling**

1. For all care operations, healthcare workers must assess the risks related to physical constraints. Before each patient handling operation, they must think of the best way of reducing the risks and the most suitable work method taking into account in particular their personal limits. They must assess the effectiveness of the method afterwards and modify it if necessary. Sharing work methods with colleagues enables these methods to be improved.
2. The safety of the health worker and patient must always take precedence over the objectives of stimulating the patient's resources during care activities.
3. As a rule, if it is not possible to eliminate risks during a care activity, technical aids must be used.
4. Healthcare workers must know, use and stimulate the patient's physical, mental and psychological resources in order to reduce stress on themselves.
5. Healthcare workers must keep up their expertise and know-how as well as their physical and mental fitness.
6. Healthcare workers must wear clothes that do not hinder their movement and stable shoes that keep the feet well-positioned in order to reduce the risks of back pain and slips.

### **II. Recommendations for the prevention of back pain when designing or re-designing health and care facilities**

1. The project owner must make the project's ergonomic requirements clear from the start of the construction programme.
2. There must be extensive consultation of the future users as of the design phase.
3. To prevent back pain in healthcare staff, designers of healthcare premises must pay particular attention to the layout of certain critical areas, such as rooms, storage spaces, corridors and lifts, central zone.
4. An assessment must be made after implementation of any changes as part of the continuous improvement of working conditions.

### **III. Technical aspects of prevention**

1. Handling aids are indispensable for healthcare workers, therapists and patients and are part of a comprehensive prevention system.

2. There must be an adequate quantity and choice of handling aids available. The healthcare workers must know how to use them safely.
3. The prerequisites that enable acceptance, appropriate and safe use of handling aids must be guaranteed.
4. Beds that can be electrically, or at least hydraulically adjusted, with an electrically adjustable head are the basis of any ergonomically efficient care.
5. Whenever possible, lifting should be avoided. If lifting is the only solution, a hoist must be used.
6. Small handling aids support patient mobility and thus effectively reduce loads on healthcare workers.

#### **IV. Organisational aspects of prevention**

1. A process must be defined for prevention in the field of ergonomics. In particular, the prevention of back problems as part of occupational health and safety must be written into the mission statement of all healthcare establishments.
2. A staff function should be set up under risk and quality management to take responsibility for the process.
3. The process of prevention in ergonomics must be applied to all areas and departments in the same way. The special needs of A&E and the operating theatre must also be given particular attention.
4. An assessment of ergonomic risks should be carried out in all functional units. When necessary, organisational structures and working procedures should be adapted to allow for organisational development. Staffing levels, ratios and duty rosters should be drawn up accordingly.
5. Once structure and procedures have been analysed, the process to be defined must be broken down into separate processes and addressed in separate projects that include experts within the framework of participative management. Project development and project management must be placed under the responsibility of the risk and quality management department.
6. The ergonomics risk analysis must be performed by a specialist.
7. Staff must be given training in ergonomics where necessary. Particular attention is to be paid to temporary staff.
8. Training multipliers or ergonomics officers plus regular reporting will ensure the creation of a network across all departments.

9. For the process of prevention in the field of ergonomics, internal criteria and indicators must be defined and regularly monitored.
10. Optimum material conditions constitute an essential factor in the ergonomic design of structures and procedures.
11. To allow for effective prevention in the field of ergonomics, sufficient financial resources must be provided.

## **V. Recommendations for basic and continuing training in back-protecting work practices in healthcare**

1. Training must be integrated into the safety culture of the organisation. Risk assessment is a fundamental prerequisite.
2. To convince the management of the importance of training in the prevention of back pain in care activities, the trainers must be able to provide well-grounded arguments on the costs and benefits of this training. The success of the training should be measured quantitatively and qualitatively.
3. The trainer must know the training level of the healthcare workers and their workplace environment. Multipliers are required in the field so that acquired knowledge is implemented.
4. The training should include the following five principles:
  - Risk analysis methods related to the healthcare situation (task, patient, environment, technical aids)
  - Methods of preventing back pain in care activities and the use of technical aids
  - Problem-solving techniques (particularly to deal with difficult patient handling situations)
  - Analysis and mobilisation of patients' and healthcare workers' psycho-motor capabilities
  - Continuing professional development and adaptation to the work environment
5. The initial training should enable healthcare workers to acquire the basics in back protection during care activities and the necessary skills for handling patients safely while protecting themselves.
6. The continuing training should include brush-up, consolidation and extension of basic knowledge and skills as well as problem-solving competence development. It should be part of a continuing professional development process.
7. In order to avoid vertical lifting and shifting without handling aids, the training must stress the need to use technical aids as well as the patient's resources.