

# **LIFTING AND HANDLING**

## **CONTENTS**

- **STRUCTURE AND FUNCTION OF THE BACK**
- **CAUSES AND CLASSIFICATION OF BACK PAIN**
- **POSTURE**
- **EXERCISES**
- **LIFTING TECHNIQUES**
- **REFERENCES**

## STRUCTURE AND FUNCTION OF THE BACK

### *The spine*

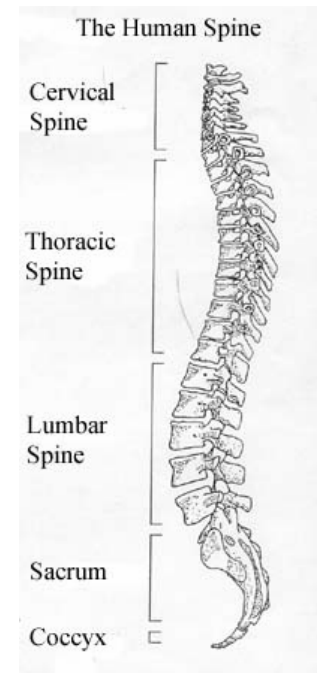
- The spine is made up of 33 bones (vertebrae)
- 12 thoracic vertebrae
- 5 lumbar vertebrae
- 5 sacral vertebrae fused together forming the sacrum
- 4 coccygeal vertebrae fused together forming the coccyx.

### *Functions*

- protection of the spinal cord
- central support of the body
- movement
- point of attachment of the ribs, muscles and girdle.

Each vertebra is designed for a specific job within the spinal column.

- a) Front – formed by the body, which takes the load.
- b) Back – formed by bony projections to house the spinal cord providing attachments for ligaments and muscles.
- c) Each vertebra has a facet and an intervertebral joint, which determines the range of movement possible.



Between each vertebra there is the intervertebral disc

- a) Acting as a shock absorber.
- b) Allowing movement of the spine.
- c) Keeping the vertebra apart.

### *Muscles*

There are three groups of muscles, which act upon the spine

1. The muscle of the spine themselves
2. The muscles of the thigh and hip
3. The abdominal muscles

These muscles all provide

1. Postural support
2. Stability
3. Power of movement

### *Ligaments*

1. Provide stability
2. Provide control of the spine
3. Can withstand stress and load

Ligaments are damaged by

1. Excessive load
2. Load in abnormal direction
3. Load applied at high speed

## CAUSES AND CLASSIFICATION OF BACK PAIN

<i>Type</i>	<i>Cause</i>
Lumbago (Strained muscle/ligaments)	<ul style="list-style-type: none"><li>• Bad posture</li><li>• Repetitive bending</li><li>• Twisting of the spine while lifting and moving</li><li>• Obesity</li><li>• Fatigue</li><li>• Lack of fitness</li><li>• History of injury</li></ul>
Slipped discs	<ul style="list-style-type: none"><li>• Aggravation of the above</li><li>• Accidents (falling etc.)</li><li>• Excessive physical work over a long period of time</li></ul>
Degenerative disc disease	<ul style="list-style-type: none"><li>• Ageing</li><li>• Child bearing</li><li>• House work</li><li>• Heavy physical work over a long period of time</li></ul>
Diseases	<ul style="list-style-type: none"><li>• Ankylosis Spondilitis</li><li>• Arthritis</li><li>• Calcium loss leading to Osteoporosis</li></ul>

## TECHNIQUES

### 1. MOVING AND LIFTING A PATIENT UP AND DOWN THE BED

#### *Shoulder lift (two nurses)*

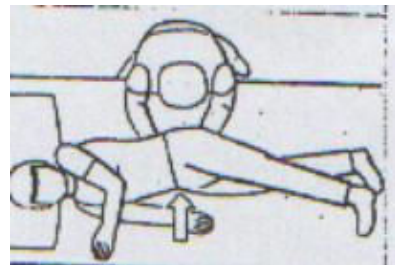


Each nurse puts one shoulder behind the patient and the hand under patient's thighs. The other hand presses on the bed (as seen on picture). From under the patient's thighs the nurses should take a wrist grip. One nurse should command "**1-2-3-lift**". Both nurses press one hand on the bed and shoulder against patient and move the patient up or down.

#### *Using a draw sheet (two nurses)*

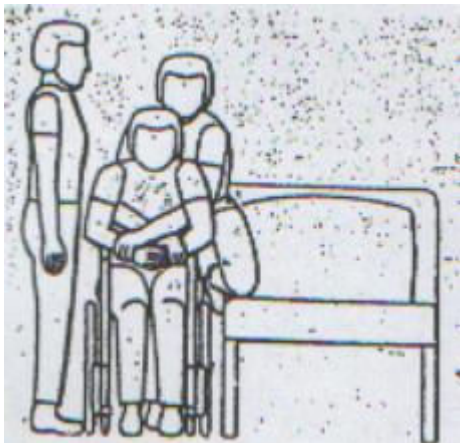
When using the draw sheet lift we avoid unnecessary abrasion and friction on the patient's skin.

## 2. HELPING PATIENT FROM SITTING TO LYING



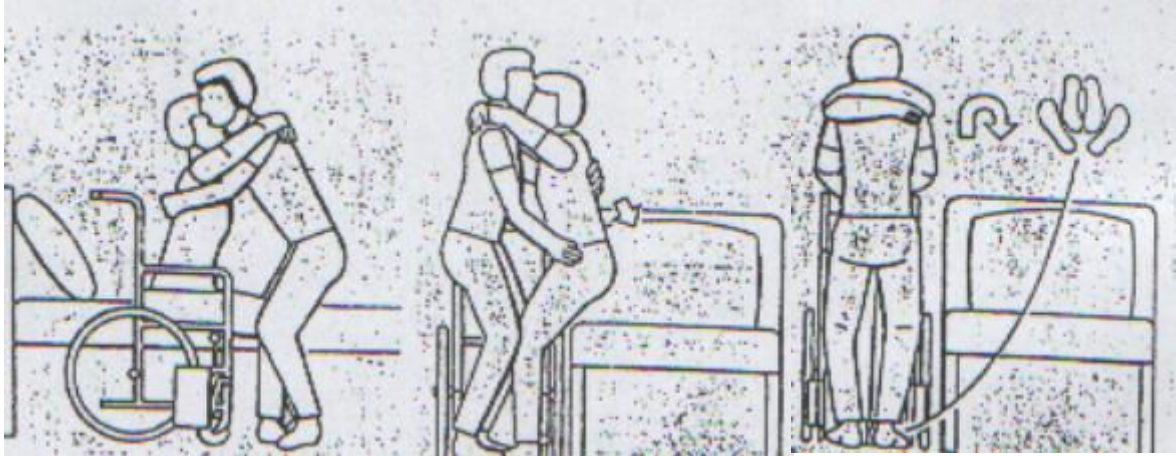
Stand on the patient's right side, with left arm around patient's shoulder. **When possible** cross patient's right foot over the left one. Bend your knees and put right hand under patient's legs. Help patient in bed. Move to the other side of the bed; put forearms under patient's waist and thighs and pull patient to the middle of the bed. Always assist patient from weaker side.

## 3. MOVING AND LIFTING A PATIENT FROM CHAIR TO BED

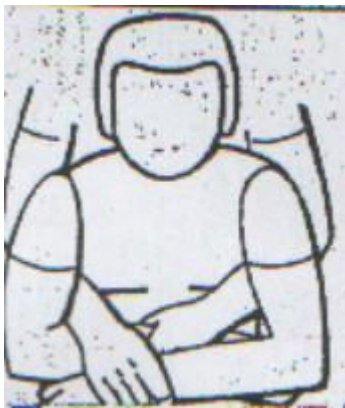


Two nurses - One nurse stands behind chair with bedside knee on bed. Slightly bends other knee and takes the patient in a through arm wrist crossed over grip. The other nurse squats, sliding one hand under patient's thighs and the other hand under heels. On the command of "1-2-3-lift" nurse one straightens supporting leg and shifts weight over bent knee. The second nurse straightens his knees and together they lift patient to bed.





One nurse – Take patient in a shoulder blade grip and position feet in a ‘ten to two’ standing position. Make sure to block patient’s knees from slipping forward and bending. Squat down slightly and on the command of **“1-2-3-stand”** straighten up so that the patient is now standing. Make sure of balance and together with patient pivot around (you can use a rotating disc). Make sure patient’s legs are against the bed. Put one hand on the front of patient’s hip and push forward to help patient sit on bed.



⇐ **THROUGH ARM WRIST CROSSED OVER GRIP**



↑ **THUMB-THROUGH GRIP**



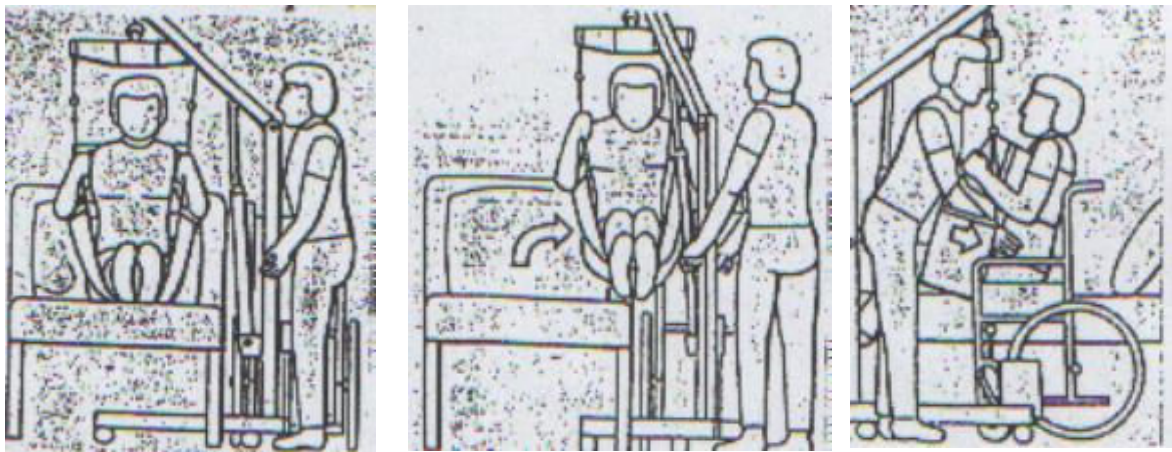
⇐ **SHOULDER BLADE GRIP**

#### 4. MOVING AND LIFTING A PATIENT FROM BED TO CHAIR

Park chair at 45° to bed. Put brakes on. Remove the armrest close to the bed and swing away footrest. The nurse stands on the right side of the patient taking a thumb-through grip with patient's right hand and holding the patient's right elbow with left hand. Assist patient to edge of bed until his feet are on the floor. Allow patient to take weight on left hand and assist patient to stand and pivot. Make sure the back of the patient's knees are against the chair before sitting.



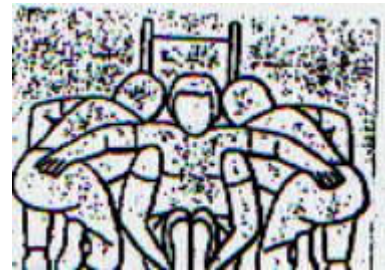
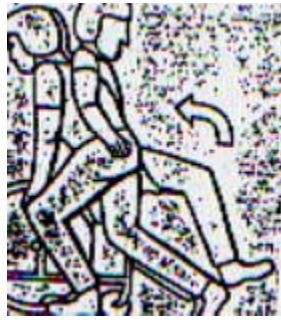
#### 5. MOVING AND LIFTING A PATIENT FROM BED TO CHAIR USING A MOBILE HOIST



Position slings under the patient and attach to hooks of hoist. Crank hoist until patient is clear off bed. Move the hoist so that patient is above chair. Lower patient into chair. Push patient's hips in the chair before touching. Remove slings.

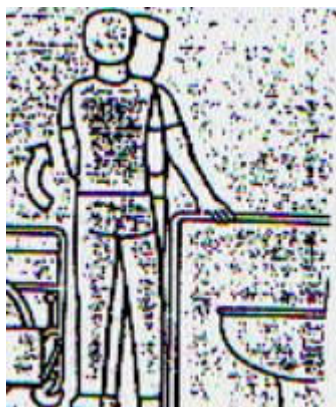


## 6. LIFTING A PATIENT FROM FLOOR TO CHAIR



Park wheelchair behind the patient. Put brakes on, armrests removed and foot plates swung away. Two nurses half kneel on either side of patient, facing wheelchair. Assist the patient into sitting position using thumb-through grip and shoulder blade grip. Put one hand under patient's thighs and clasp each other's wrist. With the other hand pushing on the knee and pressing into the patient's chest firmly lift patient up to chair. It is advisable for heavy patients to use hoists.

## 7. HELPING A PATIENT FROM CHAIR TO TOILET



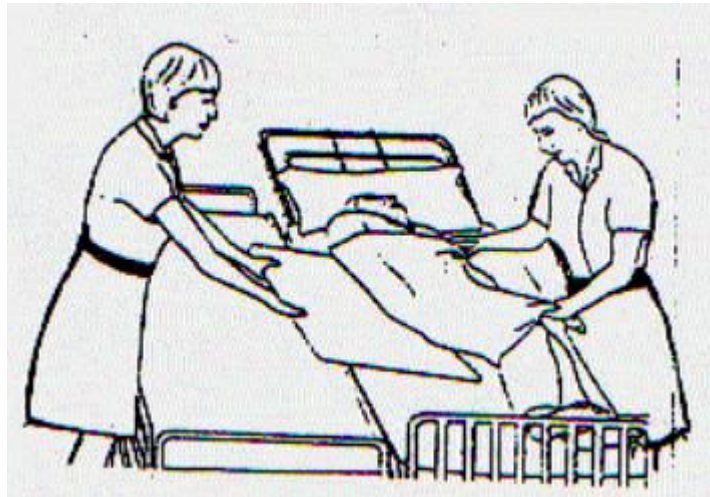
Park chair facing toilet with brakes on and footplates swung away. Stand on the right of the patient and grasp the patient's right hand in your right hand using a thumb-through grip. Put left hand under patient's arm. While patient pushes on armrest, assist patient to stand and grasp the rail. Pivot patient until legs are against toilet. Arrange clothing. Patient can now sit down on toilet while holding the rail.



## 8. MOVING AND LIFTING A PATIENT FROM BED TO STRETCHER

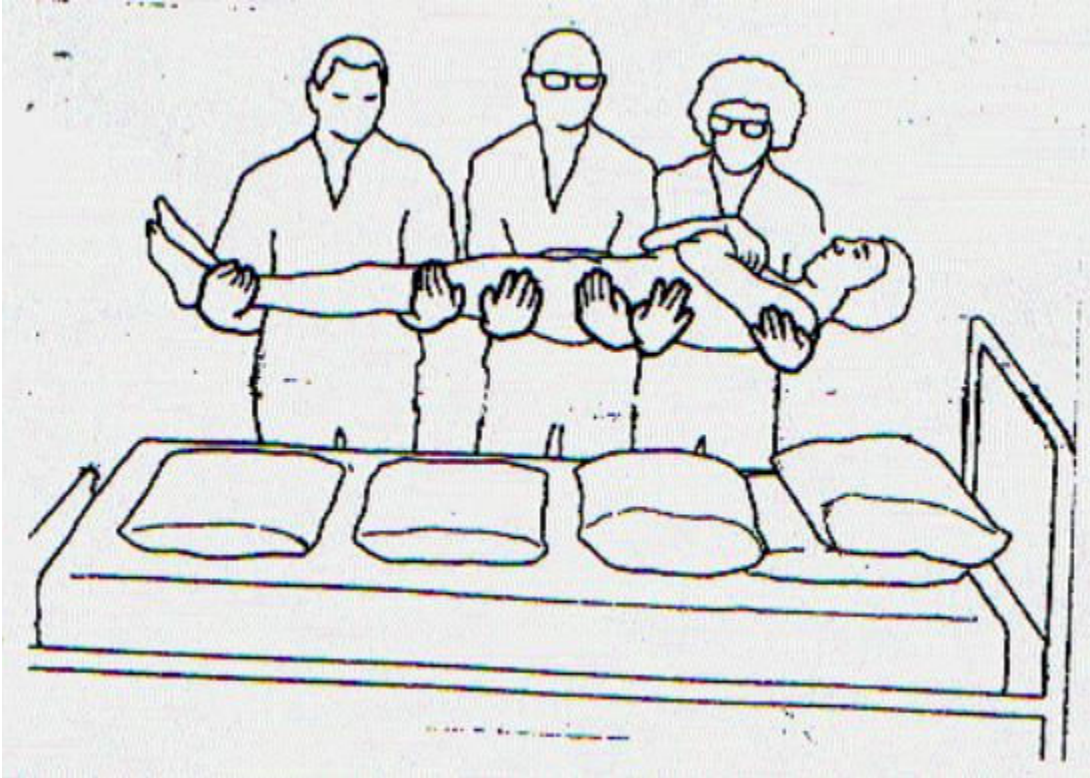
- Assess patient – patient can be unconscious or helpless – hence additional nurses are needed to support the extremities and the head.
- Explain procedure to the patient.
- Raise bed to the same height of the stretcher.
- Place draw sheet under the patient.
- Move unnecessary equipment or furniture.
- Position stretcher parallel to bed – lock wheels of stretcher and bed.
- Three nurses are needed to transfer patient.
- Two nurses on stretcher side and the third nurse stay on the other side of the bed.
- Patient is moved on the side of bed besides stretcher.
- The first nurse should reach across the stretcher and grasp drawsheet at the head and chest areas of patient.
- The second nurse should reach across the stretcher and grasp the drawsheet at waist and thigh areas.

## 1. TRANSFERRING PATIENT FROM STRETCHER TO BED USING THE BODY LENGTH SLIDING BOARD



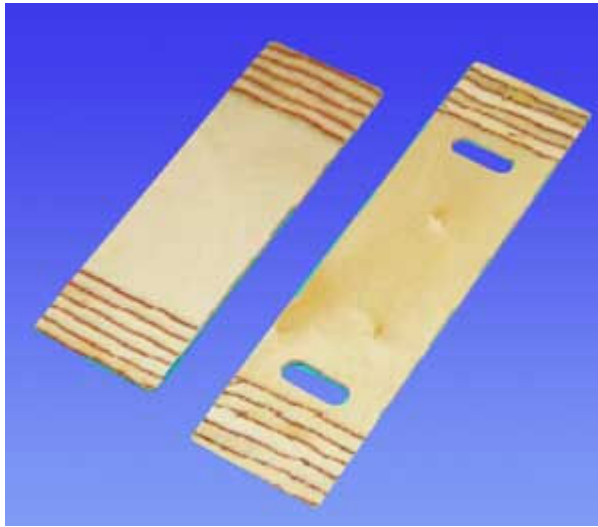
- Explain procedure to the patient.
- Raise bed to the same height of the stretcher.
- Place draw sheet under the patient.
- Move unnecessary equipment or furniture.
- Position stretcher parallel to bed – lock wheels of stretcher and bed.
- Two nurses are needed to transfer patient.
- One nurse tilts the patient slightly using the loosened drawsheet.
- The second nurse slides the sliding board under drawsheet, resting the board partially on the bed and stretcher.
- The receiving nurse grasps the drawsheet at the thoracic and mid-femoral level and slides the patient on to the stretcher.
- The sliding board is removed and the patient is made comfortable.

## 2. TRANSFERRING PATIENT FROM BED TO STRETCHER USING THE THREE-CARRIER LIFT



- Explain procedure to the patient.
- Place stretcher at right angles to foot of bed. Lock wheels of bed and stretcher. Raise bed to the height of the stretcher.
- Each nurse should support one section of the patient's body.
- First nurse – head, shoulders and chest.
- Second nurse – hips.
- Third nurse – thighs and legs.
- Prepare yourselves for the lift by flexing your knees and separating your feet, with the right foot slightly forward.
- Slide arms under patient and to a signal by the first nurse, all nurses roll patient simultaneously towards their chest.
- To a second signal all nurses should stand up with the patient held steadily against their chest.
- The nurses should now step back together, turn around to stretcher and on a third signal lower patient to the stretcher.
- Patient is positioned comfortably.

### 3. THE PATIENT HANDLING SLING



The patient-handling sling is a flexible sheet of a polymer-based material 205mm wide, 510mm long and 3mm thick, with two handholds at each end. The handholds are moulded to allow a comfortable grip. The lifter in relation to his/her own height and arm length, the obesity of the patient and the position in which the patient is situated, can select the correct handholds. It may be held with either an under grasp or an over grasp. The sling's surfaces are not alike – one is more slippery than the other is – the appropriate side should be selected – the least slippery side is best put against the patient's body. It is important to make sure that the sling is exposed equally on both sides of the patient before lifting. The sling has a breaking strain of approximately 1500kgs.

### 4. THE MOBILE HOIST

The mobile hoist is a mechanical, hydraulic or electrical device used in lifting patients. The hoists are stable when loaded and have bases that are adjustable in width. The lifting capacity of hoists varies from 127 – 250kgs. The slings in which the patient is lifted must be capable of taking the patient's weight and be comfortable. Manufacturer's instructions should be followed with precautions when using a hoist, in the interest of patients and to avoid lifting risks for carers.



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