From lifting to transferring the patient

Lifting patients and teaching lifting has a long tradition in nursing. The English guidebook *The Handling of Patients, A Guide for Nurses* (The Royal College of Nursing 1987), like other written guide books of the 1980s, was based on lifting described as a two-dimensional movement.

In 1990, the European Union (EU) introduced a directive to protect workers against the risks involved in handling heavy loads (Council directive 90/269/EEC). Most countries implemented the EU directive on Manual Handling within a few years of its issue but only a few countries had official national guide lines. The *Royal Collage of Nursing* in the UK instructed in 1992 that *two nurses should not lift a patient weighing more than 8 stones (50 kg), even in ideal condition*. They were aiming for that the lifting of patients would have to cease altogether (*Zero-lift policy).* They had to revise the Code of Practice for Patient Handling (1996): *"Manual handling may continue provided that it does not involve lifting most or all of the patient's weight.* This *zero-lift policy* has been spread to Australia and the USA. Within the Scandinavian countries the idea has been expressed as: avoid lifting – instead roll, slide and take benefit of levers for the patients, who do not bear the weight use lift.

Tabel 1. Fundamental differences between old lifting and new transferring techniques.

Lifting techniques	**Transferring techniques**
– make patients passive	– aktivate patients
– lifting is heavy	– less strenuous for the staff
– natural human movement patterns are not considered	– take advantage of natural human movement patterns
– a carer is in feet astride	– a carer in walk stance
– a carer stays on the spot	–a carer moves together with the patient

Controversial and unsafe techniques

Many techniques for the manual handling of people which were used in the past would now be considered high risk by experts and research (Marras et al. 1999, Jäger et al. 2010). These techniques are not only potentially harmful to the carer but also prevent the patient from making optimal use of his/her own resources. The old unsafe techniques are still commonly used in many countries. To change the work practices is hard, because the older workers socialize the new workers into their practice.

Old work techniques were commonly taught in the vocational education of nurses in the early 2000s in Finland (Rantsi 2005). The amount of safe patient handling training and ergonomics is insufficient in the vocational education of nurses in most European countries (Hermann et. 2014, Vries et al. 2011). That students often un-learn good practices at trainee placements instead of deepening their skills, was revealed in the results of the project *Development of evidence-based ergonomic teaching in patient handling at health care polytechnics and colleges"* (Tamminen-Peter 2007). To avoid un-learning, change must take place at the same time in the vocational education and in the workplaces.

Drag lift

When two carers are pulling a patient up by holding the patient under the armpits, the technique is called a drag lift. In the beginning of the 1980s, this method was considered ineffective, dangerous for the carer and very often painful for the patient (Troup et al. 1981). Ten years later, the method was found to be biomechanically strenuous; the lumbo-sacral compressive forces were measured 5 -7 kN (Marras et al. 1999, Jäger et al. 2010), which is over the limit value of 3,4 kN given by NIOSH. For the hemiplegia patients, whose arm is partially or completely paralyzed, the drag lift can cause soft tissue injury of the shoulder area. If the patient has some strength in his upper arms, and he tries to grip or pull with his arms, holding under the armpits or arms makes it difficult for the patient to use his own arm force.

Assist while in the front of patient

The most common method to assist alone is to assist in front of the patient, then the carer is supporting the knees of the patient with her own legs. The patient takes support around the nurse's neck, shoulder area, waist or another source. The natural movement pattern to stand up does not materialise, because the carer is in front of the patient and prevents the patient's forward leaning. Even for the fully mobile person it is impossible to stand up without pulling/pushing himself up with his arms. In the beginning of 1990s, it was considered unacceptable that the patient placed his/her arms around the carer's neck, if the patient's legs do not carry. The method may cause neck injury to the carer; otherwise the method was still accepted (Corlett et al. 1992). At the end of 1990s, the method was sentenced dangerous (Lloyd et al. 1998), like all manual patient lifting of most of an individual's bodyweight, other than in exceptional circumstances or as in lifting babies or small children. The lumbosacral compressive force is 6,4 kN when lifting a 50 kg patient with this method, so the possibility to be injured is big (Marras et al. 1999). This method is still very common in the health care.

New transferring techniques

Since 1990, different new methods to assist patients have been developed to make the work both safer and lighter. The understanding of safe manual handling has become clearer, but traditional assisting methods are still very common and have been found to especially overload female patient carers. For the heaviest lifts it is recommended to use hoists and for other assisting situations there are ways to lighten the workload such as activating the patient and using small assistive devices.

In Finland the most trained new techniques are based on the Swedish Durewall- and the American Kineasthetics -method. When applying both new methods the carers' measured and perceived strain is lower. Patients also rated the new methods as both safer and more comfortable than the old methods (Tamminen-Peter 2005).

	**Albert = Ambulatory** (A), may use a cane or similar for support - Independent, can clean and dress him/herself - Can tire quickly.
	**Barbara = Partly dependent** (B) - Uses walking frame or similar - Can support him/herself to some degree - Dependent on carer, who is present in demanding situations - Not physically demanding for carer.
	**Carl = Moderately dependent** (C) - Moves by wheelchair - Is able to partially bear weight on at least one leg - Has some trunk stability - Dependent on carer in most situations - Physically demanding for carer
	**Doris = Completely dependent** (D) - Sits in wheelchair - No capacity to support him/herself - Cannot stand unsupported and is unable to bear weight - Dependent on carer in most situations - Physically demanding for carer
	**Emma = bedridden** (E) - Passive, might be almost completely bedridden - Often stiff, contracted joints - Totally dependent - Physically demanding for carer.
	ArjoHuntleigh, 2006

Evaluate the patient's functional capacity and recording

Before assisting, the carer should identify the patient's functional capacity, how much the patient is able to move, his/her cognitive status and clinical constrains. Not knowing the patient's status might endanger both the patient and the carer, or you might give unnecessary much assistance.

Assessing the functional capacity

It is not enough for the carer to check the patient's medical record, you must also evaluate the patient's current status, the ability to cooperate, the mobility resources, his/her wishes and mobility restrictions. The best way to find out what is the patient's natural way to move, is to ask how it is normally done and customize your own way to assist into it. Information is also available from relatives and rehabilitation staff.

It is important to find out about the patient's balance, muscle strength and mobility of the limbs; in particular, whether the patient's legs are bearing weight. The muscle strength of the hands can be tested by asking him/her to grip your hands. The strength of the legs can be found by asking a sitting patient to lift and straighten the legs while resisting his action.

Recording functional capacity and the assisting method

To realize safe assistance principles require you to make a record. You have to document:

- The goal of the treatment
- The patient's functional capacity
- Variations of mobility during the day
- Medicines effects on mobility and the needed amount of assistance
- The best method to assist; illustrating it with an image
- Equipment, assistive devices and support from other staff member

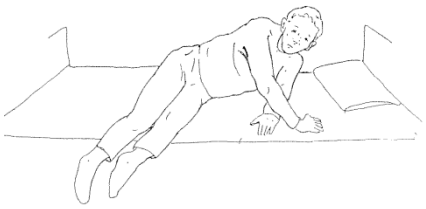
Deficiencies in documentation can lead to a dangerous situation for a new employee, or at least results in time wasted.

Classification systems of functional capacity

There are several classification systems of functional capacity and mobility of patients. For the elderly care in Finland, the international systems like RAI (Resident Assessment Instrument) and FIM-measurements along with the Finnish RAVA-index are used. In the United States, several algorithms for patient handling decision making have been formulated (Nelson 2003). Dutch experts have developed the Mobility Gallery (Knibbe et al. 2011), which classifies patients into five mobility categories, which is used in the ErgocareBank.

The Mobility Gallery helps to choose appropriate assistive devices; for example the use of a sling lift is recommended for **Doris** and **Emma**, partially weight bearing **Carl** can be transfered with an active lift. All of them need a height adjustable bed.

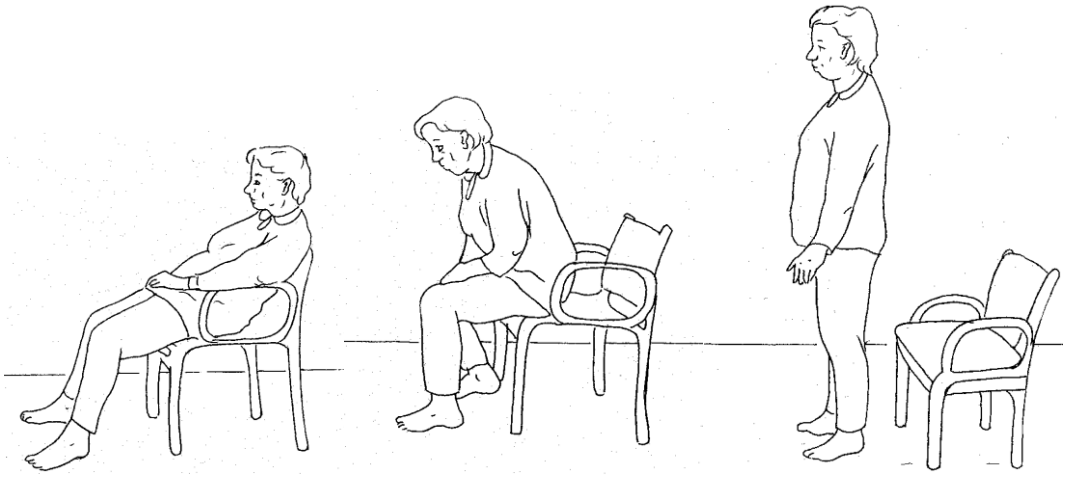
Natural movement patterns



Self-awareness is created by means of the movement. It is done unconsciously, as learned when still a child. People move according to natural movement patterns acquired during the development phase and are for all humans natural and inherent. We perform them in everyday moving, basic moving, as turning to the side from lying to sitting up, from sitting to standing up, standing and walking. These skills create the basis for the most demanding performances and skills.

From lying to sitting up.

Natural movements and movement patterns are deeply embedded in our movement memory returning quickly, unconsciously and instinctively, when we are in the right starting position and activated on the right spot (Shumway-Cook & Woollacott 1995).



From sitting to standing up the two dimensional way.

Three dimensional movements are lighter than the two dimensional ones

Movements can be two or three dimensional. For example in a two dimensional stand up the movement is in a forwards – backwards or up and down direction, whereas in a three dimensional stand up the body rotates. To perform two dimensional movements requires more effort than three dimensional ones. When one gets older, one moves less and the moving skills become poor, when the three dimensional movement is easily foregone.

Three dimensional stand up.

The patients too are assisted and lifted mainly in two dimensional manners. The rotation of the body not only lightens the performance it makes it also safer. From different stages of movement it is easy to return to the earlier position. Rotation also removes the stiffness created by limited motion and too long supine presence.

Movement patterns are individual

In order to encourage the patient in the best possible way, the nurse must ascertain the patient's natural ways to move. As the natural movement patterns are individual, there is no right movement pattern but a variety of options. If, for example, the old person has all his life moved in a certain way, it is easiest to assist him according to his movement pattern. This is particularly important for patients with a memory loss, who have difficulties learning new movement models.

The control of the movement takes place in broad units, not as individual movements; therefore the activation and control of the patient requires extensive functional entities, which are operated in appropriate sections to ensure safety. At the same time it is possible to take into account the patient's ability to cope and the carer's need to change the supporting hold during the transfer.

Basic principles of assisting people to move

The method of assisting a person will depend on the activity level of the individual, the goal of the treatment, medical restrictions and possible risks for the carer. To find the best method to assist a patient often requires several trials in the different helping situations. If necessary, a physiotherapist should be consulted. The best method to assistance should be recorded in the medical record, and it is recommended to illustrate this with an image.

The aim is that all staff use the same method, which makes it a lot easier for the patient to use his remaining movement capacity. This is especially important for the elderly patients with memory loss. Their ability to learn new movement patterns might be limited.

Choose the method to assist and the helping device

- Check the patient's medical record.
- Evaluate the patient's current status and resources.
- Find out what is the patient's natural way to move.

- Is it a manual or a lift assistance transfer? Do not manually lift patients, whose legs do not bear their weight. Will some assistive device help?
- Assess your own strength & skill in relation to the demand of the transfer and assess if you need some help.

Get ready for the transfer

- Plan the stages of transfer from beginning to end.
- Arrange the environment safety. Remove the obstacles and adjust the departing and receiving points as close to each other as possible. Adjust working height where appropriate.
- Collect the necessary helping devices and put them in place.
- Give the patient the support on which he/she can rely. The support gives the patient security and reduces handler's strain.
- When there are two handlers, agree together how to perform the task. The clear command helps to achieve the simultaneity of the transfer.

Perform the transfer consciously

- Tell the patient what he/she is supposed to do and how you will help.
- Make sure the patient has a correct starting position for moving.
- Instruct and activate the patient step by step in accordance with his/her natural movement pattern.
- Give the patient time to activate his/her muscles. Wait until he/she starts to move.
- If the patient is not able to move on a verbal instruction, combine the verbal guidance with touch and movement. Help the patient only as much as needed.
- Instead of lifting, roll, slide or pivot. When sliding, remove the friction between patient and transfer platform with the sliding material.
- Take advantage of the force of gravity and the human structure. The patient's weight is transferred from the top down to the bones of the legs to bear.

Make sure of your posture and grip

- Work generally from a good walk stance beside the patient and move simultaneously with the patient. Take advantage of the weight transfer and kinetic energy.
- Use your whole body and avoid overstretching and bending. Work with your back straight, bend the knees and keep your weight on your legs.
- Use the strong muscles of the lower limbs to create the force; do not use shoulder and upper limb muscles.
- Avoid gripping the patient's armpits and clothes; instead guide the movement with a wide soft palm touch at the hips or the back of the patient or from where the movement feels too stuck.
- Be as close to the patient as you can without hindering the movement.
- Try to achieve, for the patient and yourself, a pleasant, steady and harmonious movement.