



# The Challenge of Early Mobilization on the Intensive Care Unit: The Ergonomic Opportunities and Barriers

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In spite of efforts in hospitals in the Netherlands ergonomic problems remain to be a challenge on the majority of ICU's. The Dutch health and safety inspectorate reports that in 55% of the Dutch ICU's substantial ergonomic risks were present to such a degree that urgent improvements were required and follow-up inspections were needed (Jol et al., 2008). On ICU-units 70% of the nurses report musculoskeletal disorders over the previous past 12 months which is not uncommon in reports on ICU's in other countries (Knibbe and Geuze, 2003-2006, Sun et al., 2007, Ouyayolu et al., 2014). The high frequency of bending and twisting and transferring patients in bed contribute to the high prevalence of occupational low back pain in nurses.

When a new strategy to improve care is implemented in such a vulnerable situation, it is imperative to think ahead of the ergonomic implications for care personnel. Early Mobilization (EM) is such a promising improvement for critically ill patients, but the ergonomic impact must be considered as well.

Bed rest in the ICU has negative consequences.

Even within hours many body systems are affected as a direct result of the immobility associated with the illness in addition to the direct consequences of the illness itself. All bodily systems may become affected.

Even in healthy subjects this is clearly demonstrated by the effect on astronauts returning to earth.

In the literature examples are presented of patients being mobilized on adapted bicycles without actually being aware of this (Dueck et al., 2010, Gosselink et al., 2011).

Also in handicapped care examples are presented (Cell0, 2014). The results of this EM are positive and therefore it is relevant to analyze the ergonomic consequences in full.



The analysis was performed stepwise in two focus-group meetings with the additional use of a survey in a group of 12 ICU's along with a description of the state of science when it comes to the equipment that is required for EM and the relation with the ergonomic and occupational health challenges on an ICU. The challenges, problems, barriers and opportunities were described in a systematic way.

## Conclusions

It appears that early mobilization improves outcomes in the short and long run, but does require adequate equipment to enable the staff to implement these programs in a safe and ergonomically sound way (Vasilevskis et al 2010, Bassett et al 2012, Gosselink et al., 2011). Despite the mounting evidence of the benefits, early mobilization of ICU patients appears still not to have been widely applied. By structuring the responses from the survey and feeding them back to the participants from the 12 ICU's we have found three areas of concern when it comes to the ergonomic aspects of EM.

### 1. Terminology issues: no consensus

There is a difference in opinion on the definition of EM and there is no consensus. EM can mean anything between activating a patient by simply talking to him to actually bringing them to a standing and walking position for prolonged periods. Our study so far shows that in Dutch hospitals most IC-nurses (92%) state that early mobilization programs are in place. However when asked to specify what is meant by EM in their own hospital. it is evident that implementation is still limited.

### 2. Equipment issues

One of the major problems is the lack of equipment that will enable early mobilization without compromising the nurses' and physical therapists' health. When it comes to this equipment there is a lack of information of what is available. The type of equipment is often not adequate (f.e. transfers are not solved and/or working posture is not in line with common ergonomic-standards) and/or nursing staff is not trained to make use of all the options and/or the nurses are not confident enough that there will be no adverse clinical consequences of early mobilization for the patient.

### 3. Guideline issues

Finally it was also clear that although there are well-developed protocols available in the literature they are often not in use yet and do need to be tailored to each specific ICU situation.

It is obvious that EM requires a culture change, a change in the use of adequate ergonomic equipment that will not only enable safe EM for the patient, but also for the nurse and careful step-by-step implementation is required of the complex, interrelated processes on a ICU, EM-protocols and equipment.



## Research Questions

1. What is the degree of implementation of EM on Dutch ICU's?
2. What is the definition of EM according to nurses?
3. What kind of barriers and opportunities do nurses see when it comes to implementation from a clinical perspective and from an occupational health perspective?
4. What protocols are in use for EM?
5. What kind of equipment is in use?

## Method

A so-called context-analyses was performed to assess the opportunities and barriers for EM in the present situation. Such an analysis has proven to be successful in the past as a strategy to prepare for the introduction of ergonomic improvements on a hospital- and on a national- basis in the Netherlands. The aim is to refine the implementation strategy, anticipate on the barriers that will be always encountered and to create commitment among the target group. The context-analysis was performed with the following research instruments:

1. A survey (based on Knibbe et al., 2006, 2008),
2. Two focus group meetings with a selection of 12 ICU's.



(Cell0, 2014)



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