The main objective of acute stroke care should be to reduce death and disability, and the objective of monitoring should be the same. Treatment in stroke units (without intensive monitoring) is the only treatment option proven to reduce death in acute stroke patients, and also the only treatment that has shown beneficial long-term effects on survival and disability. All acute stroke patients seem to benefit from stroke unit treatment.

Among the different stroke unit models, the (nonintensive) comprehensive model, which combines acute treatment and rehabilitation, has been most extensively tested in randomized trials and has achieved the most favorable results. The characteristic features of care provided by such units are: (1) a standardized protocol for acute evaluation, monitoring, and medical treatment; (2) a strategy for early mobilization; (3) a strong focus on rehabilitation with an average duration of at least 1 week; (4) a multidisciplinary team; and (5) integration of medical care, nursing, and rehabilitation. According to our current knowledge, all these aspects are necessary for evidence-based stroke unit care.

During recent years the importance of one aspect, monitoring and control of physiological factors, has received increased attention. As some data from the randomized stroke unit trials indicate, control of physiological factors might be important for recovery. Today most stroke units have a systematic approach to maintenance of physiological homeostasis during the first few days. Hence, the question is not whether acute stroke patients should have monitoring or not, but rather how intensive (continuous or intermittent) and how extensive (how long? for all or only selected patients?) this should be.

From the history of acute cardiac care we know that monitoring, if too intensive or too invasive, might be harmful. From the history of the first stroke units, we know that stroke units where the main focus was on intensive monitoring did not improve outcome. Only one of the stroke units tested in the randomized trials employed continuous monitoring, and this stroke unit showed no beneficial effect.

Monitoring must be balanced against the other important aspects of stroke unit care (see above, points 2 through 5) and particularly early mobilization and rehabilitation. Early mobilization has been shown to reduce complications and to enhance recovery. It might have important effects on circulation, respiratory function, and oxygenation, as well as a positive psychological influence on the patient. We need more research to elucidate all the mechanisms behind this intervention; however, early mobilization and rehabilitation appear to be very important aspects of effective stroke unit care.

Intensive continuous monitoring for several days may lead to a delay in mobilization and may also create a psychological dependence on the monitoring equipment with the resultant fear of unmonitored movement/activities. Hence, the use of continuous monitoring is not an indifferent intervention and may have consequences, which could lead to possibly harmful changes in stroke unit care. Convincing evidence should be present before we change the main recommendations for stroke unit care, which is proven to be beneficial.

Do we today have enough evidence to recommend intensive monitoring for all acute stroke patients? A small randomized pilot trial and a controlled (not randomized) trial have shown promising results of monitoring. However, the authors of both studies conclude that we need larger randomized trials before definitive conclusions can be drawn. Additionally, the fact that we do not have trials evaluating the benefit of intervention on the specific physiological variables supports the view that it is very premature to recommend intensive monitoring as a routine for all patients.

In our comprehensive stroke unit we employ the systematic assessment of neurological status and vital functions 4 to 6 times a day during the first 2 to 3 days, during bed rest as well as activity, to all patients, and according to the protocol we have shown to be beneficial. Candidates for intensive continuous monitoring in our unit are patients with reduced consciousness, patients with progressing neurological deficits, patients with respiratory or circulatory problems (low oxygen saturation, unstable blood pressure, arrhythmia, or other unstable cardiac conditions), as well as some other high-risk patients. These patients are, from our experience, likely to benefit from intensive monitoring, but we do not know. Hence, we (and several other stroke units) have an ongoing research program in order to try to evaluate the consequences of intensive monitoring, identify the patients who seem to need such monitoring, and identify the patients who will likely be treated and trained more quickly and better without. Such research is paramount in the development of better stroke (unit) care.

In addition to its medical consequences, a general recommendation of continuous monitoring will also have economic consequences. Traditionally “high-tech” medicine has more prestige than rehabilitation and demands great resources. Expensive equipment and monitoring in the early phase may, therefore, drain resources both from the evidence-based rehabilitation in the stroke unit and from the further chain of
care, which also seems to be very important for stroke patients’ outcome.10

In summary, through systematic research based on 23 randomized trials, the Stroke Unit Trialists have developed well-defined management strategies for stroke care in stroke units, which reduce death and disability for stroke patients.1–4

From this evidence base, further research is necessary to improve the management of acute stroke. We should not change our practice before we know other approaches to be definitively superior. More intensive monitoring might lead to improved care for some subgroups of acute stroke patients. However, whether intensive monitoring is beneficial, indifferent, or harmful for the great majority of stroke patients is a yet unanswered question. At this time, we have to conclude that stroke unit care with early intensive mobilization is important, whereas intensive monitoring might be important. Today, the recommendation of intensive continuous monitoring as a routine is far from evidence based, while nonintensive stroke unit care is. It is hoped that further research will give us the answers about the most effective combination of these 2 approaches and allow us to achieve a greater standard of evidence-based stroke care.

References

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Intensive Monitoring Should Not Be the Routine
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