See related article, pages 18–23.

Stroke unit (SU) care is the only treatment option for acute stroke with proven reduction of death.\(^1\) It is also the only intervention that has shown a reduction in long-term dependency, and the majority of stroke patients benefit from this intervention.\(^4\) Hence, SU care is by far the most important treatment for stroke patients and the only treatment of acute stroke that has a major impact on the burden of stroke.\(^1\)–\(^3\)

It is important to recognize that the organization of stroke services per se plays a key role in improving the overall outcome after a stroke. Despite impressive results, the implementation of SU care is remarkably slow in many countries. A hospital survey from the United States showed that SU care was established at only 38% of the hospitals.\(^4\) In a registry of the Canadian Stroke Network, only 31% of stroke patients received care in an SU.\(^5\) Similar problems in translating knowledge into practice are also present in many other regions and countries worldwide.\(^6\)–\(^7\) It is mainly the Scandinavian countries that have implemented SUs on a large scale,\(^8\) especially Sweden, where >80% of all patients with acute stroke are offered SU care.

The positive effects of SU care not only are found in randomized trials but also persist when SUs are implemented in routine clinical practice.\(^9\) Hence, the consequences of the lack of a wide implementation of SUs are probably that many stroke patients will die unnecessarily or will become dependent and require long-term institutional care.

How Do We Improve the Implementation of Stroke Units?

A very important question is why the most important treatment for acute stroke, SUs, is so difficult to establish in most countries. The characteristics of evidence-based SU care are quite simple and should not be very difficult to implement in routine practice.\(^10\) The Stroke Unit Trialists’ Collaboration has stated that evidence-based effective SU care should have the same characteristics as the SUs that have shown the most convincing results in randomized trials. According to the Stroke Unit Trialists’ Collaboration, the basic characteristics should be: dedicated units, specially trained staff, multidisciplinary team care, and procedures for diagnostic evaluation, acute monitoring, and acute treatment, early mobilization, and a very strong focus on rehabilitation.\(^10\) The combination of acute treatment and early rehabilitation seems to be one of the most important factors for effective SU care.\(^1\)–\(^10\) Experiences from Scandinavia show that it is possible to establish such SUs both in large teaching hospitals as well as in smaller local hospitals, and with excellent clinical results.

Nevertheless, although the basic model of SU care is rather well-described, characteristics of an evidence-based SU are quite simple,\(^10\) and the results are impressive,\(^4\) this model of SU care seems to be difficult to implement on a large scale in the health services of many countries. Research that will facilitate implementation is very welcome and should have a high priority. The article published in this issue of *Stroke* by Zhu et al\(^11\) is an important contribution in this regard. The authors have explored the effects of implementation of SU care in the Calgary Health Region in Canada. They have mainly focused on in-hospital length of stay and subsequent costs, but they also looked at case fatality when an SU is implemented in the ordinary health service. Their results indicate that SU care in this clinical setting in Calgary is able to replicate the results from the randomized trials and are in agreement with other results from SU care in routine practice.\(^9\) They show that establishing an SU probably reduces the length of stay in hospital and the costs of stroke care compared to treatment in a general neurological or internal medicine ward. This is an important result for policy makers and health authorities, because this information can aid in the effort of establishing stroke units more widely, as well as in the effort of achieving more effective use of hospital resources.

The study is retrospective and there are several limitations and weaknesses, so that the results have to be interpreted with caution. The most important one is that we do not know whether some of the improved results of SU care are attributable only to a different case mix with perhaps milder strokes and more transient ischemic attack patients in the SU group. Furthermore, many changes in the organization of the health service between the 2 time periods make definitive conclusions difficult, the discharge status of the patients is not well-defined, and the resources needed in the further follow-up care are also not well-defined.

Nevertheless, the researchers have included many patients, have collected an impressive amount of data, and have produced solid results, all of which make a convincing argument for SU care as the stroke service of choice in this area, both from a medical and an economic point of view.
Future research on establishing SUs with implications for the local, regional, or national level should try to use a prospective design and record the most important information about baseline characteristics, as well as discharge status, to strengthen their studies and their results. The clinical benefits of SUs are well-known and economic analyses today are probably one of the most important approaches to facilitate further implementation of SUs and should have a high priority.

Focus on the Whole Chain of Care

Furthermore, we need a focus on the whole pathway or chain of care for stroke patients. For the majority of stroke patients, basic SU care according to the recommendations from Stroke Unit Trialists’ Collaboration will be the most effective, as well as evidence-based care, including intravenous thrombolysis for selected patients. A proportion of stroke patients will need more advanced specialized therapy in advanced stroke centers, as recommended by the Brain Attack Coalition. A combination of basic SUs for the majority of patients, together with some advanced stroke centers, which is necessary for novel therapeutic options, will probably be the service that will benefit the stroke population most effectively and will likely also be the most cost-effective approach.

When we contemplate, design, and construct the chain of care for stroke patients, we should remember that despite much effort in the acute phase, most stroke patients will experience functional deficits after a stroke. SUs and stroke services without a strong focus on rehabilitation are not effective, nor are they evidence-based. It is a trend today to strongly emphasize the very acute stage and spend a large amount of resources at this point in the chain of care. The acute phase is very important, but we cannot forget the rehabilitation aspect, which might have an equal or even greater significance for the majority of stroke patients. Hence, SUs with a strong focus on both acute care and early rehabilitation and further follow-up of rehabilitation needs, including an early supported discharge service, provide the key components in evidence-based stroke service today. It is of course necessary to adapt the organization of the stroke service to local traditions as well as variation in health care systems, but many of the key components should be present in all stroke services that want to be effective and evidence-based. The challenge is to implement these aspects of stroke service in the health service systems in different countries, and research like that from the study from Calgary is important in this aspect.

However, we already have a lot of data from randomized trials and observational studies from many different countries that allow us to implement SU strategy more widely, both in developed and developing countries. Acute stroke patients deserve to be offered SU care. Moreover, this might in fact be a matter of life or death.

Disclosures

None.

References


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References

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