

## Dedicated Stroke Units and Outcome

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Stroke is the third leading cause of death and the main cause of disability in the elderly worldwide. In Israel, based on the national acute stroke survey conducted during 2004, it is estimated that about 13,000 strokes are admitted each year to the 28 hospitals throughout the country. The in-hospital death rate was 9% and the 3 month mortality rate 16% [1].

Stroke is a catastrophic and devastating disease for both the patients and their relatives. Until now the only proven treatment for acute ischemic stroke is recombinant tissue plasminogen activator, given within 3 hours from onset under a very stringent protocol. Unfortunately, although cost-effective, only a minority of stroke patients arrive in time to hospital to be eligible for tPA treatment. Many randomized studies have reported that organized stroke care of a high standard results in better outcomes for patients. The Stroke Unit Trialists' Collaboration demonstrated that within clinical trials there were fewer deaths among patients admitted to stroke units [2]. Two studies from Sweden [3,4] and a recent one from England [5] confirm these results in routine care. The study published in this issue of IMAJ, by Silvia Koton et al. [6], appears to confirm the above-mentioned results. In a newly established dedicated stroke unit located within the Department of Neurology in a large hospital in Israel, they show a significant benefit of stroke care in the stroke unit compared to treatment in general medical wards. Although not a randomized study, it demonstrated that a stroke unit in a routine clinical practice with well-established protocols of care improves outcomes of patients with acute stroke.

Based on these data it has been recommended that stroke care be provided in stroke units [7]. Several countries, especially in Europe, have recognized this necessity and set a national goal that mandated the admission of stroke patients to stroke units in hospitals.

There is no doubt about stroke unit care being one of the most powerful interventions available to help stroke patients, yet there are only a few organized stroke units in Israel. Recently, recombinant tPA was approved for treatment of acute ischemic stroke in Israel, and it is recommended that this treatment be given in a dedicated stroke unit with well-trained multidisciplinary personnel and with written valid protocols-of-care process.

Various forms of acute stroke units exist. Most of these units provide a coordinated multidisciplinary approach to treatment and care. The core disciplines of such multidisciplinary teams

consist of a stroke neurologist, trained nurses, a physiotherapist, an occupational therapist, a speech therapist and a social worker. Programs of regular staff education and training should be provided. The National Council for Stroke Management has submitted its recommendations to the Ministry of Health regarding the various aspects of stroke care and management in Israel, including a suggested structure of an acute stroke unit in a form of an augmented care unit. Thus, the majority of stroke patients in Israel will be treated in a stroke care unit.

The available data support not only the therapeutic effectiveness of such units but also its cost-effectiveness. Therefore, the authorities and the healthcare providers should follow the European and American recommendations and strive to the challenge to set up a national structured program that will provide accessibility to dedicated stroke units for all stroke patients in Israel in the near future.

### References

1. Tanne D, Schwammenthal Y, Bornstein NM. Knowledge of stroke among Israeli population. *Harefuah* 2004;143:647-51 (Hebrew).
2. Stroke Unit Trialists' Collaboration. Organized inpatient (stroke unit) care for stroke (Cochrane Review). In: *The Cochrane Library*, Issue 4. Oxford: Update Software, 2002.
3. Stegmayr B, Aplund K, Hulter-Asberg K, Norrving B, Peltonen M, Tereent A. Stroke units in their natural habitat. Can results of randomized trials be reproduced in routine clinical practice? *Stroke* 1993;30:709-14.
4. Glader E-L, Stegmayr B, Johansson L, Hulter-Asberg K, Wester PO. Differences in long-term outcomes between patients treated in stroke units and general wards. A 2 year follow-up of stroke patients in Sweden. *Stroke* 2001;32:2124-30.
5. Rudd AG, Hoffman A, Irwin P, Lowe D, Pearson MG. Stroke unit care and outcome. Results from the 2001 National Sentinel Audit of Stroke (England, Wales and Northern Ireland). *Stroke* 2005;36:103-6.
6. Koton S, Schwammenthal Y, Merzeliak O, et al. Effectiveness of establishing a dedicated acute stroke unit in routine clinical practice in Israel. *IMAJ* 2005;7:688-93.
7. The European Stroke Initiative Executive Committee and the EUSI Writing Committee. European Stroke Initiative Recommendations for Stroke Management – Update 2003. *Cerebrovasc Dis* 2003;16:311-37.

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tPA = tissue plasminogen activator