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December 2012

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## Recommended Citation

Shaikh, Q, Kamal, A. (2012). Can telemedicine improve stroke outcomes?. *JPMA. The Journal of the Pakistan Medical Association*, 62(12), 1352-1353.

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## Can telemedicine improve stroke outcomes?

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### Why is this important?

Stroke is the third most common cause of morbidity and mortality worldwide. Though cardiac disease is still the most common cause of morbidity and mortality in the world, health care facilities are very scarce for management of stroke patients as compared to cardiac care facilities. Expansion and development of infrastructure in countries like ours will take ages. Projects like TEMPiS may prove to be of invaluable importance to third world countries like ours where Telemedicine helps in managing acute stroke patients in out

of reach areas or centres where specialist stroke units and aids are not available. Telemedical consultation with specialist stroke units and following their recommendations in patient management have been attempted in Germany.

### Who were the participants?

Telemedical Project for Integrative Stroke Care (TEMPiS) consists of the set-up of specialized local stroke wards, continuous medical education, and telemedical consultation for patients with acute stroke by 2 stroke

centers. In a prospective, nonrandomized, intervention study, 5 community hospitals participating in the network were compared with 5 matched control hospitals without specialized stroke facilities or telemedical support. All patients with consecutive ischaemic or haemorrhagic stroke admitted between July 2003 and March 2005 were evaluated. Outcome "death and dependency" was defined by death, institutional care, or disability (Barthel index <60 or Rankin scale >3).

### **What were the outcomes?**

A total of 3060 patients (1938 in TEMPiS and 1122 in control hospitals) were enrolled. Follow-up were done after 12 months and after 30 months for death or institutional care, and after 12 months and after 30 months for death and dependency. In multivariable regression analysis, there was no significant effect of the TEMPiS intervention for reduced "death or institutional care" at 12 months and 30 months but a significant reduction of "death and dependency" at 12 months and 30 months.

### **What were the conclusions?**

Implementing a system of specialized stroke wards, continuing education, and telemedicine in community hospitals, offers long-term benefit for acute stroke patients. Although the benefit did not translate into decrease in death or institutional care, it did show significant effect on death and dependency.

### **What does this mean for clinicians practicing in Pakistan?**

Pakistan is a developing country with a large population most of which is living in the rural areas. Health

facilities are limited and access is only possible in big cities. The whole country has just a couple of specialist stroke centres and availability of r-tPA is extremely scarce. In the current scenario new vistas of opening the channel to availability of basic stroke care and specialist aid in the management of these patients will hopefully decrease morbidity and mortality in this part of the world. Such endeavors which are cost effective and allow utilization of existing infrastructure without requiring huge investments might prove valuable in our setup but further work needs to be done in this field. This is especially attractive and feasible since there are a large number of cell phone users in Pakistan and we have fairly ingenious local IT solutions.

### **Acknowledgement and Disclosure Statement:**

The International Cerebrovascular Translational Clinical Research and Training Program (ICT\_CRT) at the Aga Khan University are supported by funds from the Award Number D43TW008660 from the Fogarty International Center and the National Institute of Neurologic Disorders and Stroke. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Fogarty International Center or the National Institutes of Health.

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