

Which Care Setting for Stroke Patients?

Kalra L, Evans A, Perez I, et al. Alternative strategies for stroke care: a prospective randomised controlled trial. Lancet 2000;356:894-9.

Study Overview

Objective. To determine whether a stroke unit, a stroke team consulting on general hospital wards, or home-based specialty care provides the best outcomes for patients with moderately severe strokes.

Design. Randomized controlled trial. Patients were allocated through block randomization. The researcher assessing outcomes was blinded to study allocation. Analysis was by intention to treat.

Setting and participants. The study was conducted in a suburban health district in the United Kingdom with a population of 291,000. The district had 1 hospital trust, 1 primary care center, and 1 social services agency. All patients presenting within 72 hours of the onset of a suspected stroke ($n = 1206$) between April 1995 and October 1999 were evaluated by a stroke specialist. 979 patients were considered to have strokes on clinical grounds; of these, 535 had moderately severe strokes and were asked to enroll in the study and 457 were randomized. (Patients with mild strokes, severe strokes [eg, unconscious, heavy nursing needs], unusual neurologic presentations, or who were disabled or institutionalized prior to their acute event were excluded.)

Intervention. Participants received 1 of 3 types of care. Physicians, nurses, and therapists who specialized in stroke treatment provided all acute and rehabilitative care to stroke-unit patients (Unit, $n = 152$). A similarly comprised stroke team consulted on patients who were cared for on general wards by general practitioners (Team, $n = 152$). The third patient group received specialist-supervised care in their own homes (Home, $n = 153$). Members of the Home group were admitted to the stroke unit if their condition declined, if they could not receive all needed services at home, or if their general practitioner or the home-care team decided that admission was needed. The individuals who worked in the stroke unit were not on the stroke team. After discharge from the hospital or after 3 months of home care, patients were treated through their community clinics.

Main outcome measures. The primary outcome was death or disability at 1 year. Functional assessments, most importantly Rankin scale and Barthel index scores, were also analyzed.

Main results. Ten patients did not have confirmed strokes. At 12 months, 94% to 100% of patients remained in the study. None of the 12 patients who were lost appeared in the death registry; 51 Home patients required hospitalization and ended up on the stroke unit.

After adjustment for variables independently associated with the primary outcome (age, baseline Barthel index score, dysphasia), Team patients had a relative risk (RR) of 3.2 (95% confidence interval [CI], 1.6 to 6.4) of being dead or institutionalized at 1 year compared with Unit patients. Unit care was also better than Home care (RR, 1.8; 95% CI, 1.1 to 3.8). Unit patients had significantly less mortality and nonsignificantly less institutionalization at 3, 6, and 12 months. These patients also had significantly better Rankin and Barthel scores at 12 months.

Conclusion

Specialty inpatient units dedicated to providing acute and rehabilitative care to stroke patients deliver better outcomes than specialty consultation services for patients receiving care on general wards or in the home.

Commentary

Kalra and colleagues designed a very good study with excellent follow-up. Although the study obviously could not be double-blinded (or even single-blinded for a small portion of patients who were receiving their allocated care at assessment intervals), the assessor was able to guess the allocation only 41% of the time ($\kappa = 0.12$). The authors also did sensitivity analyses to ensure that patients lost to follow-up did not significantly alter outcomes. The only period when substantial bias may have been introduced was during the initial evaluation, when patients first presented with suspected strokes. If the initial assessor was aware of allocation trends (given the block randomization design), it

is possible that the assessor may have preferentially included or excluded patients. This seems unlikely, however. The only serious criticism of the study was raised by an editorialist for the *Lancet* [1]. Hacke noted that given the results of the Stroke Unit Trialists' collaboration [2] and other recent research, it may have been unethical to randomize patients to home-based care. That Home patients generally did better than Team patients most certainly reflects the fact that one third of them needed to be hospitalized and thus received care in the stroke unit. Presumably, had these patients not received Unit care, they would have done worse than the Team patients.

Applications for Clinical Practice

This study suggests that the standard for stroke care should be the stroke unit. Whether that conclusion can be generalized to outside the UK and to patients with milder strokes is yet to be determined. Stroke units may also provide better outcomes for patients with severe strokes, although this too should be confirmed. Questions still remain regarding the optimum

length of hospitalization. Some recent studies suggest that relatively early discharges and home rehabilitation may lead to similar outcomes and less resource utilization than the standard inpatient rehabilitation [3,4]. Further studies on early hospital discharge with home rehabilitation and on the cost-effectiveness of stroke units should be forthcoming.

References

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