

# Role of Early Supported Discharge in Acute Stroke Patients

## EBEM Commentator Contact

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## SYSTEMATIC REVIEW SOURCE

This is a systematic review abstract, a regular feature of the *Annals'* Evidence-Based Emergency Medicine (EBEM) series. Each features an abstract of a systematic review from the Cochrane Database of Systematic Reviews and a commentary by an emergency physician knowledgeable in the subject area.

The source for this systematic review abstract is: Langhorne P. Services for reducing duration of hospital care for acute stroke patients (Cochrane review). Chichester, UK: Cochrane Library; 2006; issue 2.

The *Annals'* EBEM editors helped prepare the abstract of this Cochrane systematic review, as well as the Evidence-Based Medicine Teaching Points.

## OBJECTIVE

To establish the effects and costs of early supported discharge services compared with conventional services.

## DATA SOURCES

The Cochrane Stroke Group's trials register was last searched by the review group coordinator in August 2004. This register is a compilation of randomized controlled trials (RCTs) and controlled clinical trials. The register is the result of a comprehensive and up-to-date trials identification program carried out at the group's editorial base in Edinburgh. The register includes studies of a wide range of pharmacologic and nondrug interventions, including rehabilitation, surgery, and complementary medicine. The Stroke Trials Register now contains more than 7,000 reports in all languages, relating to more than 3,300 individual trials.

## STUDY SELECTION

Studies were included if they were RCTs of stroke patients, if intervention such as rehabilitation or physical support were provided in a community setting, and if the aim of the trial was accelerated discharge home from the hospital (ie, randomization takes place during hospital admission). Trials were evaluated by 2 independent reviewers who decided on eligibility. Primary patient outcome was death or long-term dependency. Secondary

outcomes included the activities of daily living score, subjective health status, mood, caregiver mood and subjective health status, and patient and caregiver satisfaction. The primary resource outcomes were the length of the index hospital stay, rate of readmissions, and cost.

## DATA EXTRACTION AND ANALYSIS

Individual patient data were obtained from the trialists, and a detailed description of their intervention and control services was sought. Where data were obtained from published sources, they were extracted by 2 independent reviewers using a standard data extraction form. Data were sought on initial stroke severity (Activities of Daily Living score during the first week poststroke).

## MAIN RESULTS

The search strategy initially identified 28 potentially eligible trials, of which the assessors agreed on the inclusion of 11 trials. Depending on the available data, a summary of the relative risks for the primary and secondary outcomes is provided in the [Table](#).

## CONCLUSIONS

Selected stroke patients in a hospital setting who received input from an early supported discharge service returned home earlier than those receiving conventional care. They were also less likely to be in institutional care; they had decreased risk of death or dependency, at approximately 5 to 6 per 100 in whom intervention was undertaken. Not surprisingly, the greatest benefit was noted in patients with mild to moderate disability who had the most tightly coordinated early supported discharge. The multidisciplinary and structured nature of early supported discharge also appears to increase the patient, but interestingly not caregiver, satisfaction, perhaps because the burden of care would start earlier for the caregiver. The benefits of these results are masked by the fact that patients with less initial disability were recruited and conclusions were based on a relatively small number of trials.

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**Table.** Summary of results.

Outcome	Data Available in	OR (95% CI) or P Value	Comment
<b>Primary</b>			
Death		NS	No significant difference for single endpoint of death
Death or institutional care	9 Trials (1,398 patients)	0.74 (0.56–0.96)	Patients with missing data (17 intervention patients, 18 controls) assumed to be alive and independent. Significant reduction in odds of death or institutional care, equivalent to an extra 5 patients regaining independence for every 100 treated.
Death or dependency	11 Trials (1,597 patients)	0.79 (0.64–0.97)	Patients with missing data (17 intervention patients, 18 controls) assumed to be alive and independent. Significant reduction in combined adverse outcome, equivalent to an extra 6 patients regaining independence for every 100 receiving ESD.
<b>Secondary: patient</b>			
Extended ADL	9 Trials (1,051 patients)	SMD: 0.12 (0.00–0.25)	Apparent increase in extended ADL scores among survivors receiving ESD.
Health status	10 Trials (1,154 patients)	NS	No significant difference in the subjective health status scores of both groups.
Mood Status	8 Trials (851 patients)	NS	Overall, there was no significant difference in mood scores.
Satisfaction	5 Trials (513 patients)	1.60 (1.08–2.38)	Significantly more likely to report satisfaction with inpatient services.
<b>Secondary: resources</b>			
Length of hospital stay	9 Trials (1015 patients)	$P < .0001$	Reduction in the length of hospital stay, which is approximately equivalent to 8 days.
Readmissions	5 Trials (663 patients)	NS	Readmission rates during scheduled follow-up were similar between the ESD service and conventional care groups.
Cost	4 Trials (592 patients)		Estimated costs were 9% to 20% less in the ESD group than controls.

ADL, Activities of daily living; ESD, early supported discharge; NS, not significant; SMD, standardized mean difference. Unless commented on, no significant heterogeneity was noted among trials for given variable.

## COMMENTARY: CLINICAL IMPLICATION

Stroke is the third leading cause of death in the United States and a major cause of serious, long-term disability.<sup>1</sup> Successful acute stroke intervention depends on early recognition of symptoms, prompt emergency transport, and rapid in-hospital treatment.<sup>2</sup> Considering this increase in incidence, extensive research has been performed to improve patient care and functional outcome. RCTs have shown that care of stroke patients in dedicated stroke units improves outcome compared with alternative forms of care and that beneficial effects are still detectable 5 years after stroke.<sup>3,4</sup>

This Cochrane review of early discharge after the initial stroke unit care demonstrates that home-based rehabilitation and care is beneficial for patients, especially for those with mild symptoms. Physical and psychosocial elements of the environment influence patients' ability to perform desired activities and attain targeted levels of participation during rehabilitation.<sup>5,6</sup> It has also been suggested that increased patient involvement in control of rehabilitation has a better outcome and that diminished control can have an adverse effect on emotional and physical health.<sup>7</sup> Home-based rehabilitation is

shown to increase motor and functional gain, with community reintegration and a better perception of physical health.<sup>8</sup>

This systematic review is important to emergency physicians because it highlights the need for stroke care to begin as early as possible, with the emergency physicians identifying and initiating goal-directed management in the emergency department (ED) itself. According to the initial presentation and disability, potential candidates for early supported discharge can be identified. Physical support and rehabilitation units should also be contacted early to enable early supported discharge. Communication can be sent to the stroke unit and rehabilitation department on presentation to the ED. Results of this review lend themselves to the creation of a streamlined protocol whereby the appropriate services such as neurology, physical medicine and rehabilitation, social services, speech and occupational therapy, and psychology could be automatically deployed as early as ED presentation.

The most important limitations in the application of these results stem from the fact that they are based on a limited number of studies and their estimates are influenced by the admission disability. For example, an overall decrease in hospital

length of stay is noted. Some of this is influenced by the local practices of individual countries; in countries in which the hospital length of stay is already shorter than “average,” the same benefit may not be possible. Furthermore, the decrease in shorter hospitalization lengths is primarily driven by the more severe strokes, and one questions whether shorter stays for the sickest patients are truly possible or beneficial. Another limitation is that patients with missing data for death outcomes were assumed to be alive and independent, which would bias the benefit of early supported discharge measures. These concerns notwithstanding, the concept of early supported discharge, which requires the formal cooperation of all those involved in the care of a stroke victim, is a proactive approach that deserves further study.

### TAKE-HOME MESSAGE

With an increase in the incidence of strokes, emergency physicians can expect to encounter more cases in the ED. According to this review, early initiation of supported discharge measures in the ED, in addition to conventional care, may reduce the total duration of hospital stay and thus reduce the overall cost of hospitalization, depending on the initial presentation and disability. Some might argue that large RCTs in this patient population are urgently needed to answer this question definitively; however, in the meantime, this is yet another example of the need for emergency physicians to link with their specialist colleagues to improve the care provided to patients from the time they present to the ED.

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### EBEM TEACHING POINT

*Composite endpoints.* Composite endpoints refer to grouped outcomes. Investigators often use composite endpoints to enhance the statistical precision and efficiency of clinical trials.<sup>9</sup>

Problems in the interpretation of these trials arise when composite endpoints include component outcomes to which patients attribute very different importance.<sup>10</sup> Composite endpoints are acceptable, provided the endpoints are of equivalent importance to the patient. For example, the composite endpoints of stroke or myocardial infarction would be appropriate, whereas combining stroke, need for anticoagulation, or repeated hospitalization would not be, because stroke is a far more severe outcome than the other 2. Especially when including “softer” endpoints such as rehospitalization or need for chronic medication, the frequency of these softer endpoints should not outweigh the more clinically meaningful endpoint. The best composite endpoints are those that are clinically meaningful, standardized, and preferably unaffected by bias.

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