

Early supported discharge after stroke

Specialist stroke rehabilitation aims to promote independence and reintegration into the community. Early supported discharge of stroke patients with mild-to-moderate disability by a coordinated multidisciplinary team not only improves physical functioning, but also reduces the economic burden of post-stroke care.

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Stroke is a common condition affecting approximately 150,000 people every year in the UK with about 2500 stroke patients in an average health district at any given time.¹ Few survivors of stroke make a complete recovery; 12–18% are left with speech problems, 25% are unable to walk, 50% have residual weakness and 24–53% remain dependent on carers for day-to-day activities.² Stroke remains the single largest cause of disability in Britain with a lasting impact on patients, carers, health and social care providers, and society. Additionally, stroke accounts for the use of a significant proportion of acute medical beds and long-term beds.³ Stroke costs the NHS and the economy approximately £7 billion per year; £2.8 billion in direct costs to the NHS, £2.4 billion in informal care costs, and £1.8 billion in income lost to reduced productivity and disability.⁴

The vast majority of patients are admitted to hospital after a stroke,⁵ and integrated care on a stroke unit has been shown to be beneficial in terms of clinical and functional

outcome.⁶ A major component of stroke management is aimed at facilitating independence and community reintegration.⁷ Hence, the sooner a patient can be returned home after stroke, the sooner the reintegration process can commence. Also, lengthy hospital stays can be detrimental through fostering of dependent relationships, social isolation, promoting immobility, and increasing the risk of nosocomial infection. Furthermore, hospital costs account for 71% of total stroke-care costs,⁸ and in an attempt to decrease the hospital costs associated with stroke without having a negative effect on patients' outcomes, early supported discharge programmes for stroke patients have been developed and evaluated.⁹

The process of early supported discharge

In an early supported discharge scheme, a qualified multidisciplinary team of health-care professionals provides

specialist stroke rehabilitation in the patient's home, with care initiated as soon as the patient is medically stable to leave hospital. The early supported discharge service is responsible for assessing individuals during hospital admission and for coordinating their discharge, in addition to providing post-discharge rehabilitation.

The personnel involved in these schemes differ depending on local need and resources, and programmes have incorporated varying numbers of physiotherapists, occupational therapists, speech and language therapists, psychologists, nurses, physicians, and personal carers.^{3,7,10} Both community inreach and hospital outreach schemes have been shown to be effective, with decisions for the locus of service control often dictated by local factors.

Early supported discharge services have inclusion and exclusion criteria to ensure that patients no longer need the medical and nursing treatment that only a hospital can provide; they can return home because they

can care for themselves or have the help of family or professional care; they need rehabilitation that can be provided at home; and they do not live too far away for the support team to visit. For these reasons, patients with extensive deficits after a stroke are usually excluded from early supported discharge schemes and continue with hospital-based care.¹⁰ Additionally, early supported discharge has been suggested to benefit patients most who will make gains from situation-dependent living where the best place to regain skills for activities of daily living is the real-life situation at home.¹¹

The benefits of early supported discharge

Randomised controlled trials have shown that early supported discharge reduces death and dependency and is cost-effective. A meta-analysis of 12 randomised controlled trials of early supported discharge involving 1659 stroke patients in six countries demonstrated that patients assigned to this intervention had an odds ratio for death or dependency of 0.81 (95%CI 0.67–0.99) compared with patients assigned to conventional hospital-based care.¹² This approximates to an extra 6 patients regaining independence and an extra 5 patients remaining at home for every 100 patients receiving early supported discharge services.¹³ This meta-analysis also showed a significant reduction in length of hospital stay for early supported discharge services (8 days [95%CI 5–11]) without increased rates of readmission.¹² This reduction in length of stay was more striking for outreach (hospital-based) services compared with inreach (community-based) services (15 days [95%CI 9–22] versus 5 days [95% CI 1–9]).¹³ Although the follow-up periods for the trials included in

the meta-analysis ranged between 3 and 12 months, similar benefits have been seen in studies with follow-up periods of up to 5 years.¹⁴

Reducing the cost of health care has become increasingly important and the majority of costs and resources for stroke care are related to hospital inpatient services.^{9,15} Indeed, while organised stroke-unit care is effective, studies have shown that stroke patients have long lengths of stay relative to other acute conditions.¹⁶ In reducing hospital length of stay for stroke patients, early supported discharge services have been shown to lower hospital-related costs and overall care costs with the saving in hospital-related costs greater than the cost of the service.^{9,15} Cost reduction for health care is greatest for individuals who make considerable progress with rehabilitation, thereby reducing long-term dependency.⁴ In view of the findings of early supported discharge reducing stroke-care costs and reducing post-stroke death and dependency, the National Stroke Strategy has emphasised the need for redesign of stroke services to ensure optimum use of resources.⁴

Rehabilitation after stroke has been described as a process in which the patient and the health-care system, through interaction and negotiation, try to reach agreement about activities to be emphasised and goals to be pursued.¹⁷ Involvement and empowerment of the patient are implicit in, and integral to, this process. The context has been postulated as a key component to be considered in the rehabilitation process of stroke patients. Von Koch et al¹⁸ showed that stroke patients undergoing rehabilitation at home took the initiative and expressed their goals more frequently than did those undergoing hospital rehabilitation.¹⁸ Patients undergoing rehabilitation at home are also observed in a wider variety of roles and consequently

identification of problem areas becomes more readily apparent both to the patient and to the rehabilitation team.^{12,19} Indeed, therapists working in early supported discharge after stroke have demonstrated that information obtained in the home environment facilitates rehabilitation strategies to assist patients to resume responsibility, to find continuity in their daily life, and to link the past to the present and the 'new body' to the 'old body'.^{19,20} However, clinical interpretation of studies assessing the benefits of early supported discharge are dependent on selection of patients with mild-to-moderate disability, a variety of health-care personnel being employed, and the majority of studies being undertaken in urban settings.^{11,12}

Conclusion

In conclusion, patients receiving early supported discharge services are more likely to be independent and living at home after their stroke. Early supported discharge also significantly shortens hospital stay, giving rise to substantial savings from hospital bed-days released that outweigh the costs of the service. Such services, provided by a well resourced, coordinated specialist multidisciplinary team, are therefore an acceptable alternative to conventional hospital stroke unit care for selected patients in areas where such services can be implemented.

I have no conflict of interest.

References

- Bath PMW, Lees KR. ABC of arterial and venous disease. *Acute Stroke*. *BMJ* 2000; **320**: 920–23
- Sacco RL. Risk factors, outcomes, and stroke subtypes for ischemic stroke. *Neurology* 1997; **49**: S39–44
- Rudd AG, Wolfe CD, Tilling K, Beech R. Randomised controlled trial to evaluate early discharge scheme for patients with stroke. *BMJ* 1997; **315**: 1039–44
- Department of Health. National Stroke Strategy. 2007 http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_081062 (accessed 30 September 2009)
- Markus HS, Khan U, Birns J, et al. Differences in stroke subtypes between black and white patients with stroke: the South London Ethnicity and Stroke Study. *Circulation* 2007; **116**: 2157–64
- Stroke Unit Trialists' Collaboration. Collaborative systematic review of the randomised trials of organised inpatient (stroke unit) care after stroke. Stroke Unit Trialists' Collaboration. *BMJ* 1997; **314**: 1151–9
- Mayo NE, Wood-Dauphinee S, Côté R, et al. There's no place like home: an evaluation of early supported discharge for stroke. *Stroke* 2000; **31**: 1016–23
- Caro JJ, Huybrechts KF, Duchesne I. Management patterns and costs of acute ischemic stroke: an international study. For the Stroke Economic Analysis Group. *Stroke* 2000; **31**: 582–90
- Teng J, Mayo NE, Latimer E, et al. Costs and caregiver consequences of early supported discharge for stroke patients. *Stroke* 2003; **34**: 528–36
- Indredavik B, Fjaertoft H, Ekeberg G, et al. Benefit of an extended stroke unit service with early supported discharge: A randomized, controlled trial. *Stroke* 2000; **31**: 2989–94
- Meijer R, van Limbeek J. Early supported discharge: a valuable alternative for some stroke patients. *Lancet* 2005; **365**: 455–56
- Langhorne P, Holmqvist LW; Early Supported Discharge Trialists. Early supported discharge after stroke. *J Rehabil Med* 2007; **39**: 103–08
- Langhorne P, Taylor G, Murray G, et al. Early supported discharge services for stroke patients: a meta-analysis of individual patients' data. *Lancet* 2005; **365**: 501–06
- Thorsén AM, Holmqvist LW, de Pedro-Cuesta J, von Koch L. A randomized controlled trial of early supported discharge and continued rehabilitation at home after stroke: five-year follow-up of patient outcome. *Stroke* 2005; **36**: 297–303
- Beech R, Rudd AG, Tilling K, Wolfe CD. Economic consequences of early inpatient discharge to community-based rehabilitation for stroke in an inner-London teaching hospital. *Stroke* 1999; **30**: 729–35
- Beech R, Ratcliffe M, Tilling K, Wolfe C. Hospital services for stroke care. A European Perspective. European Study of Stroke Care. *Stroke* 1996; **27**: 1958–64
- Bendz M. Rules of relevance after stroke. *Soc Sci Med* 2000; **51**: 713–23
- von Koch L, Wottrich AW, Holmqvist LW. Rehabilitation in the home versus the hospital: the importance of context. *Disabil Rehabil* 1998; **20**: 367–72
- von Koch L, Holmqvist LW, Wottrich AW, Tham K, de Pedro-Cuesta J. Rehabilitation at home after stroke: a descriptive study of an individualized intervention. *Clin Rehabil* 2000; **14**: 574–83
- Wottrich AW, von Koch L, Tham K. The meaning of rehabilitation in the home environment after acute stroke from the perspective of a multiprofessional team. *Phys Ther* 2007; **87**: 778–88

Key points

- The majority of costs and resources for stroke care are related to hospital inpatient services
- Early supported discharge reduces hospital length of stay for patients with mild-to-moderate disability
- Early supported discharge involves multidisciplinary specialist rehabilitation in a patient's home
- Early supported discharge reduces death and dependency after stroke
- Early supported discharge reduces the overall costs of health care after stroke