

Stroke patients transferred to discharge planning wards show no deterioration

G. Mathur, E. Phyu, R. Singh.

Department of Stroke Medicine, Leeds Teaching Hospitals NHS Trust, Leeds, England, United Kingdom.

Abstract

Aim

Stroke is a leading cause of disability in the UK, with many patients requiring inpatient rehabilitation prior to discharge. Discharge planning wards have been proposed as a strategy to enhance patient flow from specialised rehabilitation units; however, evidence regarding their safety and impact on functional outcomes remains limited. We aim to evaluate the clinical safety and functional outcomes of stroke patients transferred from a specialised inpatient rehabilitation unit to a discharge planning ward.

Methods

A retrospective review of electronic medical records was conducted for all patients transferred from the stroke rehabilitation unit at Chapel Allerton Hospital, Leeds to a discharge planning ward within the Leeds Teaching Hospitals NHS Trust between 1st December 2022 and 1st February 2025. Data collected included patient demographics, stroke type, mobility and transfer status, modified Rankin Scale (mRS) scores at transfer and discharge, discharge destination, and incidence of new medical issues.

Results

A total of 27 patients were identified, with 22 (81%) experiencing ischaemic strokes and 5 (19%) haemorrhagic strokes. The average length of stay on the discharge planning ward was 13 days. Following transfer, 14 patients were discharged home, while 13 were discharged to care facilities. No deterioration in modified Rankin Scale (mRS) scores or mobility was observed; 3 (11%) showed improvement in mRS, and 5 (19%) demonstrated enhanced mobility. Minor medical issues occurred in 6 (22%) patients, all of which were effectively managed without the need for escalation of care.

Discussion

Transferring stroke patients from specialised inpatient rehabilitation units to discharge planning wards is safe and does not compromise functional outcomes. Discharge planning

wards represent a viable transitional model to optimise patient flow, alleviate pressure on rehabilitation units, and support efficient discharge planning in stroke care.

Introduction

Stroke is a leading cause of long-term disability in the United Kingdom, with approximately 100,000 new cases reported each year.¹ The majority of stroke survivors experience various residual impairments, including hemiplegia, alterations in sensory perception, cognitive dysfunction, difficulties with speech, challenges in swallowing, visual disturbances, bladder or bowel issues, spasticity, mood disorders, and fatigue, among others.² At six months post stroke, up to 40% of individuals experience persistent difficulties with activities of daily living (ADLs).³ Consequently, 80-90% of stroke survivors require inpatient rehabilitation during their recovery.⁴

The Sentinel Stroke National Audit Programme (SSNAP), which captures data on over 90% of stroke admissions in England, Wales, and Northern Ireland, monitors post-acute discharge pathways.⁵ In 2023/24, SSNAP reported that 63.4% of patients were discharged to Early Supported Discharge (ESD) services and/or Community Rehabilitation Teams (CRT), while others were discharged home, to inpatient rehabilitation units or to care homes.⁵ Stroke Rehabilitation Units (SRU) provide multidisciplinary inpatient care to patients who no longer require acute hospitalisation but are not yet suitable for discharge.^{6,7} The average length of inpatient stay for stroke patients across the UK is around 20 days.⁸

Despite efforts to streamline discharge, numerous barriers contribute to delayed transitions from SRUs. These include limited capacity within community rehabilitation services, delays in arranging social care packages, challenges with home adaptations and equipment provision, and prolonged funding or placement decisions.⁹ Patient-related factors such as lack of carer availability or refusal of discharge destinations further complicate discharge planning.^{5,10,11}

Although recent SSNAP data indicate improvement in the proportion of patients spending at least 90% of their inpatient stay on a stroke unit—rising to 75.9% in 2023/24—this figure remains below pre-pandemic levels, highlighting ongoing challenges in patient flow and access to specialist stroke rehabilitation services.¹²

One approach to improving patient flow is the use of discharge planning wards, which serve as transitional settings for patients awaiting appropriate community-based care. However, concerns persist regarding the potential for clinical deterioration or functional decline during extended stays in such units. Currently, there is limited evidence evaluating the outcomes of patients transferred from SRUs to discharge planning wards, particularly with respect to functional status and medical complications.

The aim of this retrospective study is to evaluate the clinical safety and functional outcomes of stroke patients transferred from inpatient rehabilitation units to discharge planning wards. By identifying potential risks and areas for improvement, this study seeks to inform service development and support more efficient, patient-centred discharge pathways in stroke rehabilitation.

Methods

We conducted a retrospective analysis of electronic medical records for all patients transferred from the inpatient stroke rehabilitation ward to a discharge planning ward at Leeds Teaching Hospitals NHS Trust (LTHT) between 1st December 2022 and 1st February 2025.

Data collected included patient demographics, stroke characteristics, mobility status, transfer details, Modified Rankin Scale (mRS) scores at transfer and discharge, proposed and actual discharge destinations, and any new medical complications arising during the stay on the discharge planning ward.

All patient information was stored securely and accessed exclusively through NHS computers in accordance with data protection policies. Data analysis was performed using Microsoft Excel.

As this study was classified as a service evaluation, ethical approval was not required. The evaluation was registered with LTHT's audit office.

Results

Data was analysed from 27 patients (9 males, 18 females) admitted to LTHT, comprising 5 haemorrhagic and 22 ischaemic strokes. The mean age was 83 years. Initially, patients received acute care on the hyperacute and acute stroke wards at Leeds General Infirmary before being transferred to Ward C6, the stroke rehabilitation unit at Chapel Allerton Hospital, for further inpatient rehabilitation. Following achievement of inpatient rehabilitation goals and agreement with the whole stroke rehabilitation Multidisciplinary Team (MDT), patients were moved to the discharge planning ward, where the average length of stay was 13 days.

At discharge from the discharge planning ward, 52% of patients returned home, while 48% were transferred to a care facility. Clinical stability was maintained in 78% of patients, with no new medical complications reported post-transfer. Minor medical issues arose in 22% of patients, including hypoglycaemia, hypertension, urinary retention secondary to

constipation, and soft tissue injuries from accidental trauma; all were effectively managed on the ward without escalation of care (Figure 1).

Functional outcomes indicated no deterioration in modified Rankin Scale (mRS) scores post-transfer, with 11% of patients showing a one-point improvement (Figure 2). Mobility and transferring abilities remained stable for all patients, and 19% exhibited improvements in mobility following transfer (Figure 3).

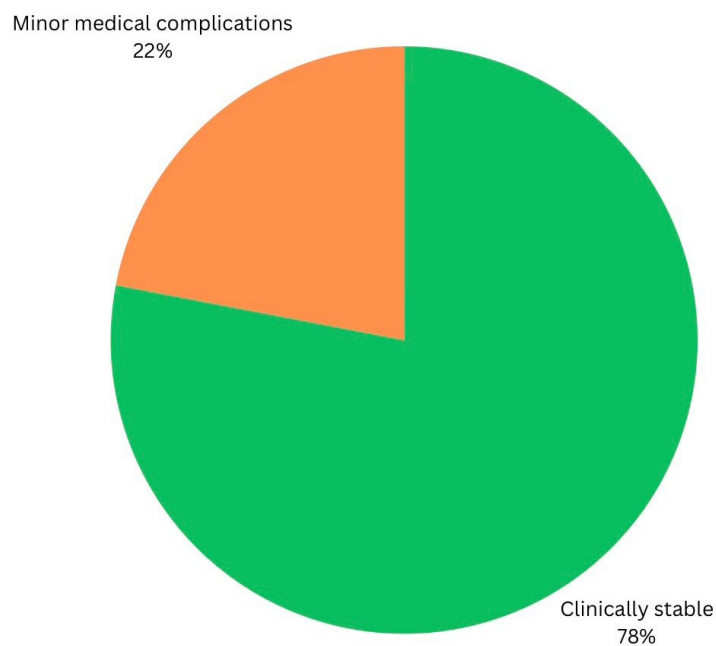


Figure 1: Frequency of medical complications in patients following transfer to a discharge planning ward

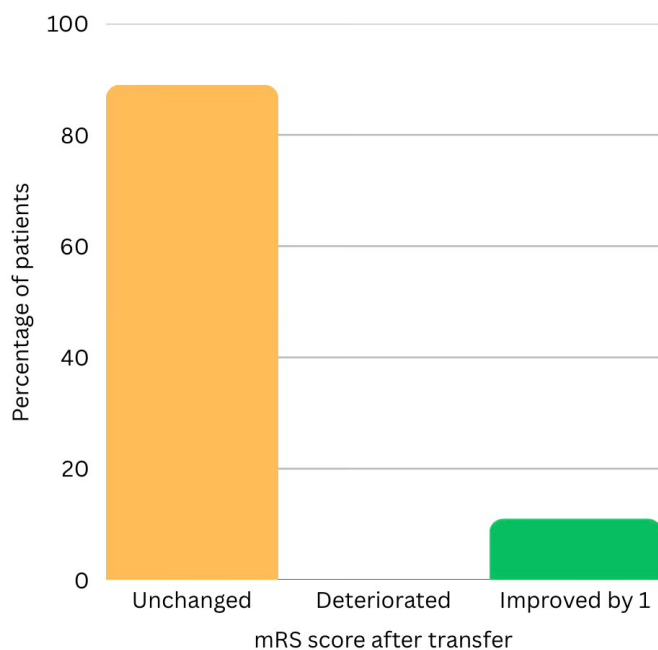


Figure 2: Changes in functional status following transfer to a discharge planning ward

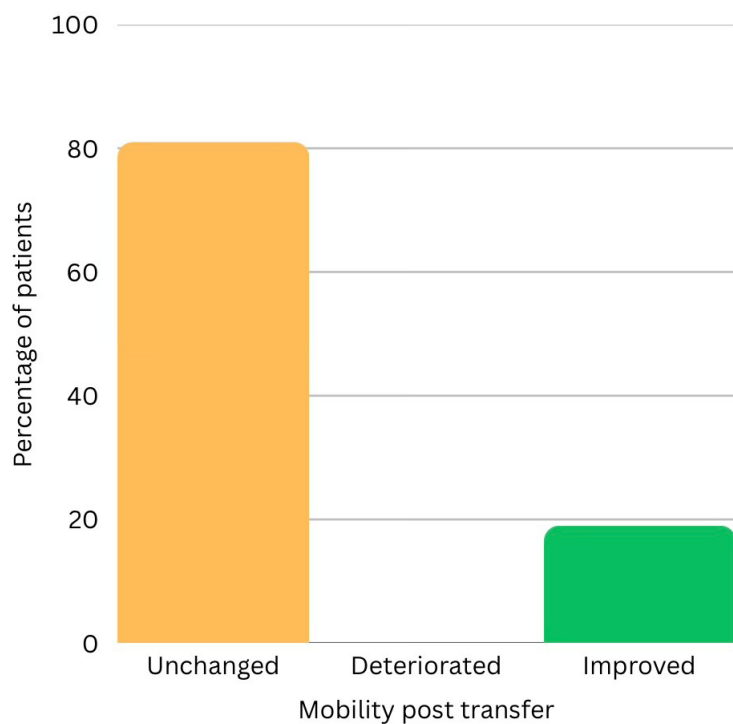


Figure 3: Changes in mobility following transfer to a discharge planning ward

Discussion

This retrospective cohort study provides reassuring evidence that transferring stroke patients from specialised inpatient rehabilitation units to discharge planning wards does not lead to deterioration in either functional or clinical status. Post-transfer medical issues were minor and easily manageable.

These findings align with the limited existing literature, including a 2019 retrospective study conducted at a Canadian medical centre investigating delayed hospital discharges from internal medicine wards.¹³ That study similarly demonstrated that medically stable patients benefit from timely transition out of high-dependency inpatient settings.¹³ Evidence directly examining outcomes in stroke patients transferred to discharge planning wards remains scarce, making this one of the first targeted studies in this area.

Interestingly, a small number of patients in our cohort demonstrated further improvement in functional and transfer status after transfer. Several factors may explain this observation. Firstly, after brain injury such as stroke, there is a predictable window of spontaneous neurological recovery—typically within the first three months—during which lost motor functions may return without specific intervention.¹⁴ Secondly, discharge planning wards and home-like environments provide greater opportunities for goal-directed activity and practice of activities of daily living (ADLs). Patients often engage more independently in tasks such as dressing, compared with conventional rehabilitation wards where assistance is more readily provided.¹⁵ This increased independence promotes functional gains and supports recovery. Furthermore, the explicit goal of discharge inherent to these wards can serve as a motivational factor, fostering patient autonomy and enhancing engagement in rehabilitation activities.

Conversely, evidence suggests that prolonged hospitalisation in traditional inpatient wards may inadvertently promote physical decline and dependency.¹⁶ Routines prioritising safety and efficiency often limit patient activity, leading to deconditioning and reduced ability to perform ADLs.¹⁷

Our results therefore highlight the value of discharge planning wards as an effective strategy to reduce length of stay in specialised rehabilitation units, enhance patient flow, and maintain safety while awaiting discharge.

Nevertheless, several potential risks must be acknowledged. Reduced access to formal therapy sessions may constrain continued functional improvement and differences in staff training compared with specialised stroke rehabilitation teams could influence care quality. Environmental transitions may increase the risk of falls or delirium and limited access to

equipment or therapy spaces could hinder progress.^{18,19} Inadequate handover between units—particularly regarding infection control and ongoing clinical monitoring—also poses potential safety concerns.²⁰

To mitigate these risks, structured transfer protocols and clearly defined care pathways are essential. Regular multidisciplinary reviews, confirmation of equipment readiness prior to transfer, and comprehensive communication with patients and families about the discharge process are key measures to ensure safe and effective transitions.

This study has several important limitations. First, we focused only on transfer and mobility status, as well as the mRS, which provides a relatively crude assessment of functional ability. Future research should incorporate more detailed and sensitive measures of functional outcomes to capture a broader range of patient recovery trajectories. Second, patients transferred to the discharge-planning ward did not receive a uniform level of therapy oversight. Variability in the type of therapeutic input may have influenced functional outcomes, and a more granular evaluation of these factors would help clarify their impact.

In summary, discharge planning wards appear to optimise patient flow and preserve clinical and functional outcomes for stroke survivors transitioning out of specialised rehabilitation. However, their success depends on robust multidisciplinary collaboration and adherence to standardised procedures to maintain safety and quality of care.

The results of this retrospective study indicates that moving stroke patients to a discharge planning ward from a specialised rehabilitation unit is both safe and effective in improving overall patient flow. Functional outcomes are preserved, and the rate of medical complications stays low following the transition.

Despite the limitations discussed above, these findings suggest that the transfer to a discharge planning ward aids in reducing the burden on specialised rehabilitation units, enhances patient flow, and facilitates efficient discharge planning.

Declarations of Conflicts of Interest:

None declared.

Corresponding Author:

Rajinder Singh,
Department of Stroke Medicine,
Leeds Teaching Hospitals NHS Trust,
Leeds,
England,
United Kingdom.

E-Mail: Rajinder.singh10@nhs.net

References:

1. NHS England. Hospital admissions for strokes rise by 28% since 2004 – as NHS urges the public to ‘Act FAST’. NHS England; 2024 Nov 4. Available from: <https://www.england.nhs.uk/2024/11/hospital-admissions-for-strokes-rise-by-28-since-2004-as-nhs-urges-the-public-to-act-fast/>
2. Adamson J, Beswick A, Ebrahim S. Is stroke the most common cause of disability?. *Journal of stroke and cerebrovascular diseases*. 2004 Jul 1;13(4):171-7.
3. Mayo NE, Wood-Dauphinee S, Co[^]te R, Durcan L, Carlton J. Activity, participation, and quality of life 6 months poststroke. *Archives of physical medicine and rehabilitation*. 2002 Aug 1;83(8):1035-42.
4. Gittins M, Vail A, Bowen A, Lugo-Palacios D, Paley L, Bray B, Gannon B, Tyson S. Factors influencing the amount of therapy received during inpatient stroke care: an analysis of data from the UK Sentinel Stroke National Audit Programme. *Clinical rehabilitation*. 2020 Jul;34(7):981-91.
5. Sentinel Stroke National Audit Programme (SSNAP). SSNAP Annual Report 2023. [Internet]. 2023. Available from: <https://www.strokeaudit.org/Documents/AnnualReport/2023-SSNAP-Annual-Report.aspx>
6. Young J, Forster A. Review of stroke rehabilitation. *Bmj*. 2007 Jan 11;334(7584):86-90.
7. Bonifacio GB, Ward NS, Emsley HC, Cooper J, Bernhardt J. Optimising rehabilitation and recovery after a stroke. *Practical neurology*. 2022 Dec 1;22(6):478-85.
8. Fisher RJ, Byrne A, Chouliara N, Lewis S, Paley L, Hoffman A, Rudd A, Robinson T, Langhorne P, Walker M. Effect of stroke early supported discharge on length of hospital stay: analysis from a national stroke registry. *BMJ open*. 2021 Jan 1;11(1):e043480.
9. New PW, Cameron PA, Olver JH, Stoelwinder JU. Defining barriers to discharge from inpatient rehabilitation, classifying their causes, and proposed performance indicators for rehabilitation patient flow. *Archives of Physical Medicine and Rehabilitation*. 2013 Jan 1;94(1):201-8.
10. Chevalley O, Truijen S, Saeys W, Opsommer E. Socio-environmental predictive factors for discharge destination after inpatient rehabilitation in patients with stroke: a systematic review and meta-analysis. *Disability and rehabilitation*. 2022 Aug 28;44(18):4974-85.
11. Clery A, Bhalla A, Bisquera A, Skolarus LE, Marshall I, McKevitt C, Rudd A, Sackley C, Martin FC, Manthorpe J, Wolfe C. Long-term trends in stroke survivors discharged to care homes: the South London Stroke Register. *Stroke*. 2020 Jan;51(1):179-85.
12. SSNAP State of the Nation Report 2024 [Internet]. 2024. Available from: <https://www.hqip.org.uk/resource/ssnap-nov24/>

13. Bai AD, Dai C, Srivastava S, Smith CA, Gill SS. Risk factors, costs and complications of delayed hospital discharge from internal medicine wards at a Canadian academic medical centre: retrospective cohort study. *BMC health services research*. 2019 Dec 4;19(1):935.
14. Raghavan P. Stroke recovery timeline [Internet]. Baltimore (MD): Johns Hopkins Medicine; 2025 [cited 2025 Nov 7]. Available from: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/stroke/stroke-recovery-timeline>
15. Simpson DB, Breslin M, Cumming T, de Zoete S, Gall SL, Schmidt M, English C, Callisaya ML. Go Home, Sit Less: The Impact of Home Versus Hospital Rehabilitation Environment on Activity Levels of Stroke Survivors. *Arch Phys Med Rehabil*. 2018 Nov;99(11):2216-2221.e1. doi: 10.1016/j.apmr.2018.04.012. Epub 2018 May 8. PMID: 29750901.
16. Loyd C, Markland AD, Zhang Y, Fowler M, Harper S, Wright NC, Carter CS, Buford TW, Smith CH, Kennedy R, Brown CJ. Prevalence of Hospital-Associated Disability in Older Adults: A Meta-analysis. *J Am Med Dir Assoc*. 2020 Apr;21(4):455-461.e5. doi: 10.1016/j.jamda.2019.09.015. Epub 2019 Nov 14. PMID: 31734122; PMCID: PMC7469431.
17. Costa A, Jones F, Kulnik ST, Clarke D, Honey S, Robert G. Doing nothing? An ethnography of patients' (In)activity on an acute stroke unit. *Health (London)*. 2022 Jul;26(4):457-474. doi: 10.1177/1363459320969784. Epub 2021 Jan 9. PMID: 33426969; PMCID: PMC9163771.
18. McMurdo M, Witham M. Ward moves putting patients at risk. *Age UK*; 2013. Available from: <https://www.ageuk.org.uk/latest-news/archive/ward-moves-putting-patients-at-risk/>
19. Naylor MD, Keating SA. Transitional care. *Am J Nurs*. 2008 Sep;108(9):58-63.
20. Waring J, Marshall F, Bishop S, Sahota O, Walker M, Currie G, Fisher R, Avery T. The threats to safe discharge. In *An ethnographic study of knowledge sharing across the boundaries between care processes, services and organisations: the contributions to 'safe' hospital discharge* 2014 Sep. NIHR Journals Library.