

# A service evaluation of the feasibility of a community-based consultant and stroke navigator review of health and social care needs in stroke survivors 6 weeks after hospital discharge

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## ABSTRACT

The Department of Health Stroke Strategy (2007) recommends that post stroke patients are reviewed within 6 weeks of discharge. Historically, a 6-week outpatient appointment was offered. This was primarily a medical review and not a full assessment of health, social care status and secondary prevention needs. An innovative joint domiciliary clinic was developed in order to meet these recommendations. The joint clinic reviews were conducted by a stroke consultant and an allied health professional. There were no readmissions at 6 weeks and 6 months post stroke. User satisfaction was very high and there were no missed appointments. Patient health and social status was fully captured, reported and acted upon holistically following each review. This form of integrated partnership working seems to promote seamless life after-stroke care, while enhancing patients' understanding. It includes the provision of secondary prevention and self-management strategies. This 'one-stop shop' approach would warrant formal evaluation.

**KEYWORDS:** Stroke navigation, domiciliary, multidisciplinary review

## Introduction

The Department of Health's (DH's) National Stroke Strategy Quality Marker (QM) 14 recommends that stroke survivors, and their carers, whether living at home or in care homes, be offered a review.<sup>1</sup> These reviews should encompass health- and social care status and secondary prevention needs. It is recommended that these reviews be conducted within 6 weeks of discharge home (or to a care home) and again 6 months after discharge.<sup>2</sup>

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The National Audit Office (NAO) statistics indicate that there are approximately 110,000 strokes per year in England.<sup>3</sup> There are reportedly more than 900,000 people living in England who have had a stroke and around half of stroke survivors are left dependent on others for everyday activities.<sup>3</sup> Within the context of the steadily ageing population, with increasing co-morbidities and frailty, costs to health- and social care are likely to increase exponentially.<sup>4</sup>

In the UK, the launch of the National Stroke Strategy in 2007, and the government's 'ACT FAST' campaign, has raised public awareness of the symptoms of stroke, while emphasising the fact that it is a medical emergency. Regular follow up of stroke patients has been highlighted as an essential part of their care after discharge from hospital. This is one factor that reduces the risk of stroke recurrence and hospital readmission for this population.<sup>1,3,5</sup> However, an NAO report on the progress of stroke care has noted that health- and social care services are not working together as well as they could.<sup>6</sup> One-third of patients are not receiving a follow-up appointment within 6 weeks of discharge and only half the stroke survivors in the NAO survey said that they were given advice on further stroke prevention when leaving hospital.<sup>6,7</sup> These findings are supported by previous research that suggests that ongoing community care for frail older people also falls short of acceptable levels.<sup>8</sup>

Recent significant findings from the Stroke Association's (SA's) Daily Life Survey 2011–2012 indicated that too many people who have had a stroke were not being assessed for their health- and social care needs beyond hospital. These patients were missing out on services that could help in their recovery. It also reported that ongoing reviews addressing health- and social care needs were not offered routinely.<sup>9</sup> Some of the reasons for this relate to lack of staff and resources, inflexible operational models of care and fragmented ways of working. Egan *et al* suggested that one way to address this lack of appropriate aftercare could be through 'community stroke navigation'.<sup>10</sup> They reported that this had the potential to make a positive impact on community reintegration. More recently, the use of a structured review process at the 6-month follow up showed that unmet needs could be identified through a purposeful review service aimed at capturing those needs.<sup>11</sup>

The Camden Stroke Navigation Service started in March 2011 with the aim of offering specialist health and social reviews to all

Camden residents diagnosed with a new stroke. Stroke navigation assists patients and their families to understand and cross the stroke pathway, ensuring that they access the services that best meet their needs. It concentrates on education and secondary prevention of stroke, and includes sign-posting to services focused on life after stroke and community integration.<sup>12</sup> The Camden stroke navigator is an allied health professional (AHP) agenda for change band 7 with experience in stroke, from an occupational therapy, physiotherapy or nursing background.

Before March 2011, Camden residents who had a stroke were offered a 6-week medical outpatient appointment by various acute trusts. These outpatient appointments were focused on medical stroke care and did not capture information as defined by a QM14-style review.

After discussions between the Royal Free Hospital (RFH) stroke unit and the Camden Stroke Navigation Service, it was recognised that there was potential to work collaboratively to offer 6-week specialist medical reviews to patients discharged from the RFH stroke unit or discharged under the RFH catchment area from a hyperacute stroke unit (HASU). These patients would be jointly reviewed by the stroke consultant and the Camden stroke navigator to address social status and after-stroke care needs.

It was agreed to pilot a domiciliary clinic, initially for a period of 3 months and subsequently continued as an ongoing venture for 1 year. As far as the authors are aware, this is a unique model of service delivery across the stroke pathway and probably the only one of its kind in England. This paper is designed to present the concept of consultant-led community stroke follow up and outline initial findings from a feasibility point of view, as an introduction to a full evaluation of the service in due course.

## Methods

From April 2011, the RFH stroke unit and Camden Stroke Navigation Service worked together to develop an innovative way to address meeting the QM14. Options such as hosting a joint clinic at either the RFH or the Camden community team base sites were explored, with costs, availability and risk of non-attendance making these options unsustainable. As a result of this, there was agreement to pilot a consultant-led domiciliary joint clinic concept. The National Research Ethics Service Committee London (Camden and Islington) confirmed that ethical approval was not required for service evaluation of this pilot. Nevertheless both clinical governance teams at the two sites were contacted and ethical standards of non-maleficence, informed consent, confidentiality and anonymity were adhered to.

To be eligible for the joint review, a patient had to be aged  $\geq 18$  years and a Camden resident in the catchment area of the RFH, and have a new diagnosis of stroke confirmed by a stroke consultant. Patients who declined participation after provision of service information, or those who moved outside the catchment area, were excluded from the community review. Each review took place at approximately 6 weeks after discharge from an HASU, the acute stroke unit at the RFH, other stroke units or inpatient rehabilitation units. Patients were identified through the Camden Stroke Register, by phone call or email, to the stroke navigator, or through attendance at the RFH stroke unit. Any patient identified as eligible was offered the review service.

Joint review clinics were held twice a month by the Camden stroke navigator and an RFH stroke consultant. These were domiciliary clinics held in patients' homes or care homes. The

**Table 1. Stroke unit, age, gender and review environment.**

<b>HSAU attended</b>	
University College Hospital	59%
Northwick Park	2%
Received thrombolysis at HASU	9.8%
Attended non-HASU stroke unit	39%
<b>Age of patients seen</b>	
Average	67.5 years
Median	70 years
Range	41–88 years
<b>Gender</b>	
Male	49%
Female	51%
Received thrombolysis	6%
<b>Discharge location</b>	
Usual residence (including care home)	92%
New care home placement	8%
<b>Community rehabilitation on discharge</b>	
Early supported discharge	39%
Community stroke rehabilitation	18%
No rehabilitation referral on hospital discharge	43%
Average time frame from hospital discharge to time of review	40 days

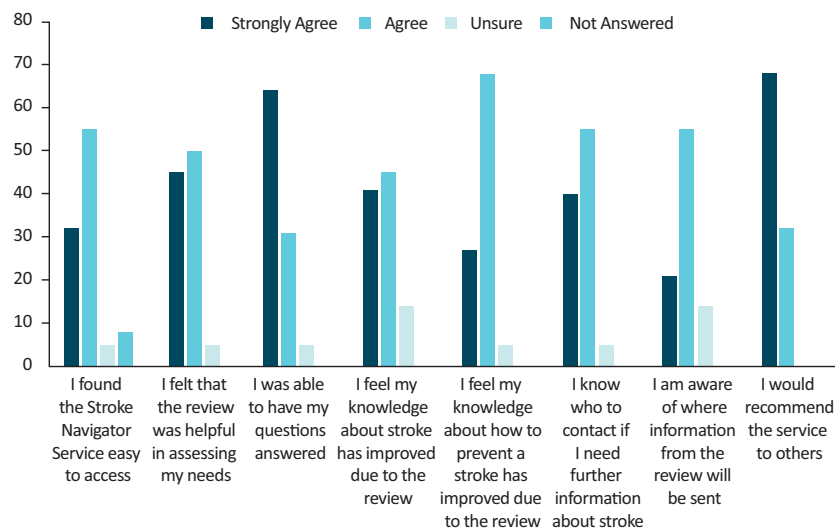
HSAU = hyperacute stroke unit.

Camden stroke navigator had access to a Camden community team pool car which was used for all clinics.

Each joint review focused on the patient's individual medical, health, social and secondary prevention needs. This was achieved as follows:

- > review of medical history, investigation results and vascular risk factors
- > questionnaires to detect perceived quality of life, function, mood and level of disability
- > physical measurements: height, weight, balance, mobility, strength, sensation, visual fields, acuity, coordination and proprioception
- > physical examination by the stroke consultant
- > biochemical measurements: blood sugar level, blood pressure, heart rate and total cholesterol
- > lifestyle risk factor management: diet, smoking, alcohol intake, physical activity
- > patient experience by means of a service user questionnaire.

Education and advice were provided on vascular risk factor management, lifestyle modification, stroke rehabilitation and stroke prevention. Information was also provided on the role and suitability of National Health Service (NHS)-based community and third sector services. The carer featured strongly within the review and was given advice and support about the stroke



**Fig 1. Summary of feedback responses from the questionnaires received.**

survivor's ongoing psychological and physical needs. Practical support was offered as necessary. All patients were provided individual education on their vascular risk factors, secondary prevention of stroke and the 'ACT FAST' campaign.

Various stroke-specific outcome measures were used to evaluate patient experience: an in-house patient satisfaction questionnaire; quality of life, perceived function and social interaction (Stroke Impact Scale);<sup>13</sup> mood (Signs of Depression Screening Scale – SDSS),<sup>14</sup> Yale question and Depression Intensity Scale Circle (DISC scales);<sup>15</sup> and function (Barthel<sup>16</sup> and Modified Rankin Scale).<sup>17</sup> All onward referrals were made and accepted within 1 week of each clinic appointment.

A clinic letter and combined report were written by the stroke consultant and stroke navigator and sent to the patient and general practitioner (GP) within 1 week of each clinic intervention. The report detailed the clinic visit, issues identified, interventions provided and suggested recommendations. A service questionnaire was also provided for return by the patient or carer to the stroke navigator via a stamped addressed envelope. Outcomes of individual clinic reviews were added to the Camden Stroke Register by the stroke navigator after each clinic session had been completed. The data to inform the results of this review was collated from this register.

## Results

The clinics ran for 3 hours, inclusive of travel time, and an average of three patients were seen per clinic session, with a range of two to four patients per session. The average length of time for each visit was 50 minutes. A total of 55 patients were seen in the joint clinic reviews between April 2011 and April 2012. All patients reviewed live in the London Borough of Camden, which has a widely mixed ethnic and social demographic. Tables 1–4 summarise clinic outcomes and demographics for these 55 patients.

Fig 1 is a summary of feedback responses obtained from service satisfaction surveys sent out to all patients post review. The survey used a 5-point Likert scale which listed 'Strongly agree', 'Agree', 'Unsure', 'Disagree' and 'Strongly disagree' as the options. The options 'Disagree' and 'Strongly disagree' were not used by any respondents and have been omitted from Fig 1 for ease of reading.

## Main findings

The readmission rate for new stroke at 6 weeks and 6 months was 0% for all patients reviewed. On the 6-month follow-up review none of the patients had been readmitted to hospital for stroke symptoms or new stroke. By comparison the readmission rate for hospital-based stroke clinics was higher, at 7.5%. The 'did not attend' (DNA) rate for the new clinic was 0%. The DNA rate was higher at 12.7% for hospital-based clinics during this period.

There was an informal or formal carer present at 53% of the reviews. Seven patients were reviewed in a nursing home setting. All clinic patients had a blood pressure (BP) review completed. Of the 55 patients reviewed, 78% had a BP reading above the recommended National Institute for Health and Care Excellence (NICE 2011) guidance of 140/90 mmHg (Table 2).<sup>18</sup> After the reviews, BP management recommendations for 45 patients were communicated to GPs (Table 3). Due to flexibility in the style of clinic structure, the stroke navigator was able to telephone GPs after clinic appointments with the stroke consultant's recommendations. Positive feedback was received from the GPs on all occasions.

An important stroke prevention strategy is to maintain a routine of recommended physical exercise, ie 150 minutes of weekly activity of moderate intensity.<sup>19</sup> In the authors' cohort of patients reviewed, 73% reported activity levels below target (Table 2). Of these patients, 89% were referred on to an appropriate community-based exercise programme (Table 3).

Pre-stroke activity levels were not recorded during the reviews as a comparison to post-stroke levels. It is recommended that this be addressed in a follow-up study. The recorded physical inactivity may be related to the Modified Rankin scores. The median Modified Rankin scale score of this cohort indicated that patients reviewed were demonstrating moderate disability at 6 weeks after discharge (Table 2). This may have had an impact on an individual's ability to perform moderate level exercise.

The reviews found that 22% of patients required referral for social service intervention. These referrals centred on review of care support for patients and carers, assistance with personal and domestic packages of care, and support with re-housing.

Sixteen education topics were covered during the reviews (Table 3). This involved explanation of the topic in jargon-free

**Table 2. Summary of information obtained during the clinic.**

<b>Patients informing review</b>		<b>Package of care (POC) on discharge</b>	
Patients only	47%	Had a POC on d/c	53%
Patients and informal carer	37%	Average size of POC	57 h/week
Informal carer only	2%	Median size of POC	21 h/week
Patients and staff nurse	14%	Range of size for POC	0–168 h/week
<b>Location of review</b>		<b>POC on review</b>	
Patient's home	86%	Had POC on review	43%
Nursing home	14%	Average size of POC	54.9 h/week
Blood pressures taken during review	100%	Median size of POC	21 h/week
Number of readings >140/90 mmHg	78%	Range of size for POC	0–168 h/week
<b>Smoking history</b>		<b>Barthel scores</b>	
Current	8%	Average	15
Ex	12%	Median	19
		Range	0–20
<b>Body mass index (BMI) measured or estimated</b>		<b>Modified Rankin scale scores</b>	
BMI high (25–30+)	31%	Average	2
BMI healthy (18–25)	63%	Median	3
BMI underweight (>17)	6%	Range	0–5
<b>Activity levels</b>		<b>Stroke Impact Scale or SAQOL*</b>	
Below target	73%	Completed	67%
On target	25%	Declined	12%
Above target	2%	Unable to complete due to cognitive impairment	12%
<b>Living arrangements</b>		Unable to complete due to communication impairment	7%
Lives alone	41%	Unable to complete as English is second language	2%
Lives with spouse, family, friend	47%		
In residential care	12%		

BMI = body mass index; d/c = discharge; POC = package of care; SAQOL = Stroke and Aphasia Quality of Life scale.

\*In some instances the SAQOL was completed in place of the Stroke Impact Scale, to allow comparison with previous results obtained along the patient's pathway.

terms to the patient and carer, follow-up calls by the stroke navigator and information sent out by post. 'ACT FAST' (100%), 'stroke secondary prevention' (100%) and 'stroke risk factors' (100%) were the most common topics for education, followed by 'diet' (31%) and 'what is a stroke?' (31%).

Service user satisfaction questionnaires were sent to all patients reviewed. The response rate for service feedback questionnaires was 43%, with 35% being completed by patients and 8% by carers. This is a satisfactory response rate based on previous research.<sup>20</sup> All completed questionnaires were returned on average within 1 month of review. Anonymous coding was used to capture the time frame. The responses indicate that there is high user satisfaction associated with this method of stroke follow up (Fig 1).

## Discussion

This model of a 'one stop shop' multidisciplinary team (MDT) review in the patient's home environment provides a holistic review of stroke aftercare and the needs of stroke survivors. It is

an MDT approach with enhanced links to community resources, aimed at meeting the needs of life after a stroke. The focus of the clinic is to promote self-management strategies and reintegration into community life. The review service has two primary outcomes: (1) the provision of education to patients and (2) referral to other services when needs are identified. The findings of this paper suggest that this service meets those needs and is in line with previous research focusing on stroke reviews.<sup>11</sup>

The authors feel that this type of clinic reaches out to people who traditionally would not be able to attend an outpatient clinic due to being housebound or in alternative home environments. It also makes use of the valuable information provided by both informal and formal carers. It is unlikely that so many carers could have participated in the review had it not been located in the patient's home, and the effect of this would be useful to examine in a follow-up study.

With the new NHS drivers for change focusing on the early detection and case management of frail community-dwelling patients, this domiciliary model of stroke review is well placed to highlight issues pertaining to vulnerable stroke survivors and to

**Table 3. Summary of referrals made as a result of the clinic assessment; each referral made was accepted by the relevant service.**

Referrals and recommendations made	Percentage of patients
GP: BP	88%
Referral to community based exercise program	65%
GP: other GP-related medical issues identified at review	35%
Social services/social work	22%
Neuro: occupational therapy	10%
Stroke clubs/day centre	10%
GP: cholesterol	10%
Neuro: physiotherapy	10%
Neuro: speech and language therapy	8%
Stroke-related follow-up clinic	8%
GP: smoking cessation	8%
Stroke Association	8%
District nursing: continence	8%
Neuro: clinical psychologist	6%
Neuro: dietician	6%
Camden carers support worker	4%
Wheelchair service	4%
Social services: occupational therapy	2%
Financial assessment	2%
Sensory needs service	2%
<b>Total number of individual referrals made</b>	<b>130</b>

BP = blood pressure; GP = general practitioner.

liaise with their GP and local MDT for review and intervention. This is especially advantageous when patients are housebound after a stroke, cognitively impaired or living alone.

Education and secondary prevention of stroke, including vascular risk factor management, are integral to all stroke reviews, both in hospital outpatient settings and in the community. However, a much wider scope has been demonstrated with the community clinic as the recommendation and referral table highlights (Table 3), eg although most patients seen in nursing homes were medically stable and only one change to medication was made, interventions were provided by the stroke navigator about positioning, pressure care and seating. Referrals were accepted by the wheelchair service and the continence service for nursing home patients. The stroke navigator also provided heel pressure-relieving protective equipment (Table 3). This would have been much less likely to have been highlighted in a hospital-based outpatient clinic review.

Physical activity was promoted by education and information on local community resources for exercise, with referral to Camden Active Health and Exercise on Prescription where appropriate. This would potentially not be offered during a hospital-based medical review because of lack of knowledge of community resources or exercise options available through GP services.

One of the disadvantages of the clinic is the time invested per patient, which is almost twice that of a hospital outpatient clinic. However, the DNA rate is 0%. If further studies showed that this type of service led to decreased readmission rates, the time invested would probably be cost-effective compared with bed-days saved. The authors also feel a similar review could be very useful for patients who have had a transient ischaemic attack.

Given the small sample size, it is not possible to reach conclusions about the type of patient most suited to this style of clinic. This should be investigated with a larger sample; however, in clinical practice it appears that the clinic is particularly useful for clients who have moderate-to-severe impairments that would result in difficulty attending a clinic. This could be very pertinent to patients who cannot access the community easily as a result of their functional status after a stroke and those who are nursing home residents. Further research could focus on ascertaining inclusion and exclusion criteria for stroke clinics through appropriate randomisation into consultant-led vs AHP-led clinics. An interesting outcome could be the use of clinical outcome measures and functional status for the potential stratification of patients into levels of suspected need in terms of type of stroke review. This could lead on to further work conducted by face-to-face vs phone clinics, taking into consideration the current financial constraints and need for services to increase productivity while maintaining appropriate clinical standards and safety. On consideration of the positive reflection from patients and also as a result of the fact that the stroke clinics appear safe due to high clinical efficacy, the unique opportunity of seeing patients in their own environment can uncover valuable insights that greatly assist with stroke aftercare for any patient. A health economic evaluation, in the form of a longitudinal study comparing consultant-led clinics with standard outpatient care, would be useful in showing any cost-effectiveness through reduction in readmissions and resource burden on primary and secondary care after a stroke.

## Reflection

The stroke consultant felt that it was deeply satisfying to be able to provide stroke survivors with a multidisciplinary review. This clinic's review was more detailed than a traditional hospital outpatient review. Reviewing the patient in a home environment lent an extra dimension to the assessment because the clinician could see how the stroke survivor was coping with the multiple environmental and social factors influencing his or her life. Moreover, the presence of a colleague with a different skill set facilitated the exchange of ideas and helped to provide the best management option for patients, some of whom had complex health- and social care issues. This clinic viewed the patient as a person with multiple facets to his or her life, as opposed to someone who is a list of medical conditions. This holistic review was less likely to occur in a hospital setting and would rely mainly on a patient's report rather than reviewers' observations. The consultant felt that another advantage of the clinic was that the stroke navigator was able to liaise quickly with the GP when changes to patient medication were required. In a hospital outpatient setting, it would be unlikely that staff would be available to complete this intervention.

The stroke navigator felt that the presence of a consultant within the review was invaluable. Patients often report finding

### Key points

It is possible to achieve a holistic approach to stroke aftercare, as described by this joint clinic model

No patients were readmitted to hospital for stroke recurrence within 6 months of review

The results indicate a positive reaction from service users reflecting a diverse assessment approach and onward referral based on individual needs

Feedback shows that the joint clinic service is viewed as a central point of contact in the stroke community, ensuring that no one is isolated on discharge

A formal and structured evaluation of this model should be conducted ■

medication, diagnoses and risk factors difficult to understand. However, they are often reluctant, or unable, to ask medical consultants questions. The stroke navigator would initially discuss the review with the patient over the phone and could assist with raising any concerns with the consultant. These concerns would then be answered promptly and thoroughly during the review. The consultant's presence during the review enabled expert medical advice to be communicated immediately to the patient and GP about the best management of the individual stroke risk factors, as well as allowing direct onward investigative referrals to be made. It proved invaluable in an educational sense, allowing complex patients to have risk factors associated with comorbidities, eg amyloidosis or cancer medication, fully explained. This would be outside the sphere of knowledge of an AHP or nurse conducting a similar review. The consultant's presence when discussing social, functional and lifestyle factors helped in communicating the importance of changes in these areas.

### Limitations of the paper

This paper outlines a service evaluation and has not directly compared the joint domiciliary clinic with an outpatient clinic, or a hospital-based clinic with an MDT element. As a paper introducing a novel concept there has been no robust financial analysis or economic evaluation. Moreover the paper does not analyse data beyond the review period stated, and this service evaluation was conducted using data collected primarily by the reviewers during the patient clinic appointments. Using an independent assessor would be beneficial in eliminating any bias.

Recommendations for future analysis would be to design and conduct randomised controlled trials that compare hospital-based outpatient stroke clinic outcomes with this joint clinic domiciliary model of delivering holistic stroke aftercare. It would be beneficial to look at outcomes such as function, stroke risk factors, further stroke events and social inclusion 6 months after the review. Considering that it takes roughly 17 years to implement research in practice,<sup>21</sup> our service evaluation and implementation methodology attempt to provide enough

**Table 4. Education topics covered during reviews.**

Education provided	Percentage
'ACT FAST' campaign	100%
Stroke prevention – general	60%
Stroke risk factors	45%
Diet	31%
What is a stroke?	31%
Medications	29%
Activity	24%
Community resources	22%
Carer support	12%
Cognitive symptoms	6%
Positioning	4%
Emotional support	4%
Smoking	4%
Pressure care	2%
Alcohol	2%
Neuroplasticity/recovery	2%
Total number of education topics covered	193

justification to ensure that the domiciliary stroke clinic concept is taken through to a clinical trial stage. Ideally it could then be concluded with translational research and evaluation, reporting any added value and improvement in health outcomes, through the use of operational support from organisational and clinical catalysts throughout the study.<sup>22</sup>

### Conclusion

In line with national policies and drivers the authors' team proposed an innovative way of reaching stroke survivors and their families, to help them complete a holistic, community-based follow-up review 6 weeks after hospital discharge. Working in partnership has been strongly promoted through the introduction of this project.

Promoting a healthy lifestyle and reducing cardiovascular risk factors have become a priority for NHS policy reforms, alongside patient education and self-management of chronic conditions.<sup>23</sup> Financial incentives will be gained by reducing the rates of readmission to hospitals and in the long term reduce the burden of severely disabled patients in the health- and social care system.

This model of joint review in the community is able to achieve a holistic approach to stroke aftercare. The results indicate a positive reaction from service users, reflecting a diverse assessment approach and onward referral based on individual needs. Feedback shows that the joint clinic service is viewed as a central point of contact in the stroke community, ensuring that no one is isolated on discharge. Further investigation into the nature of a formal and structured evaluation, both qualitative and quantitative, should be conducted. ■

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