# Stroke Specific Vocational Rehabilitation (SSVR): A Feasibility Randomised Controlled Trial

Radford KA[1], Grant MI[1], Sinclair EJ [1], Sampson C[5], Edwards C[1], Terry J [2], Walker MF [1], Phillips J [1], Drummond A [4], Lincoln NB [3], Rowley E [5], Watkins L [6], Brain N [6], Guo B [5], Jarvis M [7], Jenkinson M [7]

[1] Division of Rehabilitation and Ageing, University of Nottingham, [2] Nottingham CityCare Partnership, [3] School of Psychology, University of Nottingham, [4] School of Nursing, University of Nottingham, [5] Institute of Mental Health, University of Nottingham, [6] Derby Hospitals NHS Foundation Trust, [7] Service User Representatives, Nottinghamshire and Derbyshire

## Background

A quarter of strokes occur in people aged ≤65 years of age[1]. Returning to work is a key goal[2] and recognised health outcome[3]. However, NHS Rehabilitation often ends when minimal function is regained and fails to address work needs[4].

Vocational Rehabilitation (VR) is a process where those disadvantaged by illness or disability can 'access, maintain or return to employment'[5]. Policy and clinical guidelines support health based VR but evidence to underpin VR interventions for stroke survivors is lacking[6].

## Aims

To test the feasibility of delivering an OT-led stroke-specific vocational rehabilitation (SSVR) intervention and measuring its effectiveness and cost-effectiveness compared to usual NHS rehabilitation (Usual Care, UC) in a feasibility randomised controlled trial (RCT).

## Method

Previously employed stroke survivors aged ≥16 who were in paid or unpaid work (>1 hour per week) or in full time education at stroke onset and intending to return, were recruited from acute and stroke rehabilitation units in one district general hospital over 15 months between September 2010 and December 2011 and randomised to receive SSVR or UC. People unable/unwilling to consent, not intending to work or medically precluded e.g. epilepsy were excluded.

Those randomised to receive SSVR were seen by the research OT for a mean of 9 (SD 7, range 1-25) sessions of individually tailored vocational rehabilitation, which commenced within four weeks of hospital discahrge.

Primary and secondary outcomes were measured using standardized and bespoke postal questionnaires at 3, 6 and 12 months.

Self reported service use was cross-referenced with service records in 10% of participants and costs were calculated.



Figure 1: Feasibilty Trial Design

**Primary outcomes:**
Occupational and benefit status.

**Secondary Outcomes:**
**Mood**; Hospital Anxiety and Depression Scale
**Work Productivity**; Work Productivity and Impairment Questionnaire, Work Limitations Questionnaire
**Social Participation**; Sydney Psychosocial Reintegration Scale
**Activities of Daily Living;** Nottingham Extended Activities of Daily Living
**Health Status**; EQ5D
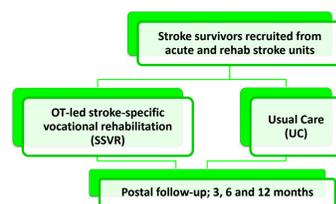**Resource use**; Bespoke questionnaire[7]

## Intervention

VR based on best practice guidelines[5] involved:

- Assessing stroke impact on patient and their role as worker/student.
- Educating patients/families/employers about stroke effects and impact on work/education.
- Strategies to lessen stroke impact e.g. pacing techniques to manage fatigue.
- Work preparation i.e. establishing routines with gradually increasing activity levels to increase stamina, concentration and confidence; practicing work skills.
- Liaison with employers/tutors to plan and monitor a phased return to work.



Photo 1: Research OT on a work site visit.

## Results 1

Of the 126 patients screened 46 were recruited (36 men, mean 56 (SD 12.7) 18-78 years) (Figure 2). Thirty–two people failed to meet the inclusion criteria and five were excluded due to; death (n=1), terminal illness (n=1), and confounding problems identified by the ward staff (n=3).

Fourty-one people declined, most common reasons were failure to recognise need for support (n=8) and presence of cognitive and or speech difficulties (n=7).

Participant characteristics are shown in Table 1. Most (29) had NIHSS scores ≤15, were in professional roles (65%) or self-employed (21.7%) at onset.
Groups were comparable at baseline. More participants in SSVR had professional or managerial jobs with more semi-skilled workers in UC, but no salary differences.
The average response rate across the three times points was 73.9%. At 12 months, 32 completed questionnaires were available across; 78% of the SSVR participants responded, compared to 61% in UC.
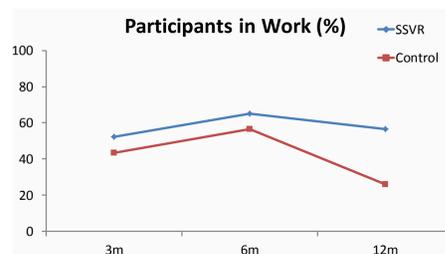


Figure 3: Proportion of participants in work

| Baseline Characteristics | SSVR n (%) | Control n (%) |
|---|---|---|
| **Age** | | |
| Mean (SD) | 58.3 (12.7) | 53.8 (12.6) |
| Range | 24-78 | 18-77 |
| **Sex** | | |
| Men | 17 (73.9) | 19 (82.6) |
| Women | 6 (26.1) | 4 (17.4) |
| **Ethnicity** | | |
| White British | 23 (100) | 22 (95.7) |
| Caribbean | 0 (0) | 1 (4.3) |
| **LOS hospital** | | |
| Mean (SD) Range | 19.6 (21.6) 0-82 | 27.1 (26.9) 1-100 |
| **Speech problems** | 15 (65.2) | 13 (56.5) |
| **Visual problems** | 9 (39.1) | 15 (65.2) |
| **Stroke Severity NIHSS** | | |
| Minor (1-4) | 8 (34.8) | 8 (34.8) |
| Moderate (5-15) | 7 (30.4) | 6 (26.1) |
| Moderate/Severe (15-20) | 2 (8.7) | 2 (8.7) |
| Severe (20+) | 0 (0) | 0 (0) |
| Missing | 6 (26.1) | 7 (30.4) |
| **Pre-Stroke Working Hours** | | |
| Mean (SD) Range | 32.2 (15.8) 3-55 | 36 (13.2) 4.5-55 |
| **Driving before Stroke** | | |
| Yes | 19 (82.6) | 14 (60.9) |
| **Annual Income** | | |
| Mean | €20,081 | €21,262 |
| SD (Range) | €12,983(€4,200-€45,182) | €12,435 (€2,400-€50,000) |
| **Standard Occupational Classification Skill Level** | | |
| Non-professional | 4 (17.4) | 2 (52.2) |
| Professional | 19 (82.6) | 11 (47.8) |

Table 1: Participant Characteristics

## Results 2

Intervention was successfully deployed in 22/23 cases.
At 12 months, 12/23 (52%) SSVR participants reported being in work compared to 6/23 (26%) of control participants* (Figure 3). Percentage productivity loss was greater in UC (Figure 4).

Scores on other secondary outcome measures were comparable between groups. Cross-referencing for five participants was labour intensive, involving 51 phone calls and 23 letters/emails. Self-reported and actual service use data were discrepant. Stroke survivors underestimated GP and consultant input and overestimated therapy input.

*More participants were lost to follow up in the control group.
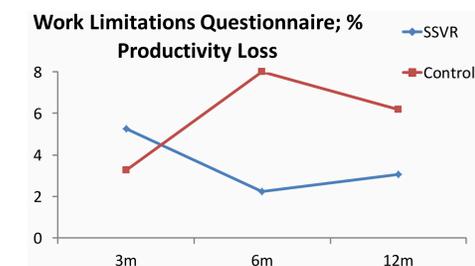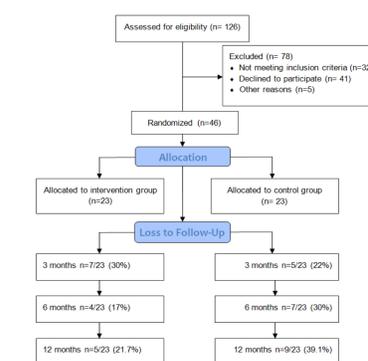


Figure 2: Consort Diagram



Figure 4: Self rated productivity loss at 3, 6 and 12 months

## Conclusion

SSVR can be delivered and its effects and costs measured using standardised and bespoke questionnaires.

This early intervention can potentially influence job retention rates in people with mild and moderate stroke. However, a larger trial is needed to demonstrate the effect and more reliable methods of capturing service use, income and benefit data and clearer definitions of work are needed.

Stroke severity and communication difficulties influenced participation. A different model may be needed for those with severe stroke and those unable to return to an existing job.

## References

1. Daniel et al (2009) What are the social consequences of stroke for working-aged adults? A systematic review. Stroke: 40:431- 440.
2. Getting back to work after stroke (2006) The Stroke Association and Different Strokes, London.
3. Department of Health (2010) The NHS Outcomes Framework 2011/12, London.
4. Care Quality Commission (2011) Supporting Life After Stroke: A Review of Services for People who have had a Stroke and their Carers. London:CQC.
5. Tyerman A, Meehan MJ (2004) (eds). Vocational assessment and rehabilitation after acquired brain injury: Inter-agency guidelines. London: British Society of Rehabilitation Medicine/Royal College of Physicians.
6. Baldwin C, Brusco NK (2011) The effect of vocational rehabilitation on return-to-work rates post stroke: a systematic review. Topics in Stroke Rehabilitation, 18(3), 562-72.
7. Thomson S and Wordsworth S. An annotated cost questionnaire for completion by patients. HERU Discussion series 03/01: Accessed at http://www.abdn.ac.uk/heru/pdfs/dptext0301.pdf on 28th July 2004.