

Question 52 evidence tables

Question 52: What is best way to support people with stroke to return to work?

NB Any discrepancies between reviewers in evidence quality and comment were discussed at the corresponding evidence review meeting

RTW = return to work, BI = barthel index, MoCA = Montreal cognitive assessment, ESSVR = Early Stroke Specialist Vocational Rehabilitation, VR = vocational rehabilitation, ABI = acquired brain injury, EVR = early vocational rehabilitation, SR = systematic review, MA = meta-analysis, RCT = randomised controlled trial, IPDMA = individual patient data meta-analysis, MDT = multidisciplinary team, PICO = patient/population, intervention, comparison and outcomes, OR = odds ratio, CI = confidence interval, QoL = quality of life, ADL = activities of daily living, OR = odds ratio, RR = relative risk, aOR = adjusted odds ratio, cOR = crude odds ratio, CI = confidence interval, RoB = risk of bias, I2 = heterogeneity statistic.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
255	R. Brouns et al. (2019). Interventions to promote work participation after ischaemic stroke: A systematic review. <i>Clinical Neurology and Neurosurgery</i> , 185: no pagination	Design: SR of 2 studies (including 1 retrospective study and 1 Controlled Trial without randomisation). Participants: People with ischaemic stroke, involving N=448 (Intervention: N=315; Control: N=133). Mean age range 52y (44-56) - 56.8y (±12.5), Male gender 64-73%. Stroke severity: mild-severe. Settings: Outpatient rehabilitation centre (USA), inpatient stroke unit (Serbia).	Retrospective study: - Content: Neuropsychological services (1h pw), social work (1h pw), physiotherapy (2-4 h pw), occupational therapy (2-4 h pw), speech and language therapy (dose not stated). - Dose: 2x pw, 3 months Controlled trial: - Intervention: intravenous thrombolytic therapy - Control: no intravenous thrombolytic therapy - Concomitant treatment not stated	Retrospective study: 1. Proportion of participants returning to professional activities 2. Mayo Portland Adaptability Inventory-4 Controlled study: 3. Return to full-time paid job 4. Return to any kind of job	Retrospective study: 1. Numbers returning to competitive employment 123 to 39; modified employment 22 to 7; school 3 to 6; home making 4 to 7, volunteering 5 to 18 2. Improvement from mean (SD) 46.2 (15.6) to 25.2 (15.3) Controlled study 3. Intervention 43 to 143; Control 20 to 133 4. Intervention 56 to 143; Control 42 to 133	+ Acceptable quality Robust search methodology was used, but since low quality studies were eligible and only two could be included (none of which were RCTs), no firm conclusions can be drawn from this review.

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255	R. Brouns et al. (2019). Interventions to promote work participation after ischaemic stroke: A systematic review. <i>Clinical Neurology and Neurosurgery</i> , 185: no pagination	systematic review; adults aged 18+; post-ischaemic stroke; mixed populations where stroke-only data could be extracted; mixed populations where 80%+ of participants were people who had had an ischaemic stroke	any return to work intervention (intervention defined as: any active manipulation of environment, behaviour or disease which aimed to improve or promote health)	Primary outcome: proportion of participants who successfully* returned to work (RTW); *not defined Secondary outcomes: time between stroke onset and RTW; maintenance of work activity over time; time off/off sick; scores on validated workability scales	2 papers: Perna et al. 2015 (retrospective); Stefanovich et al. 2016 (prospective) Population: 315 ischaemic stroke patients; mostly male (64% and 73%); age: 56.8 years (mean) and 52 years (median) Results: A 3-month, twice-weekly outpatient program (neuropsychological services, social work, physical therapy, speech therapy) resulted in RTW for 30% (approx) (Perna et al.; note: low methodological quality) 30% patients receiving thrombolytic therapy returned to full-time paid employment compared with patients not receiving thrombolytic therapy (Stefanovich et al.)	+ Acceptable Comments: Searches were limited to 5 languages: English, French, German, Dutch, Spanish
256	B. H. P. M. Donker-Cools et al. (2016). Effective return-to-work interventions after acquired brain injury: A systematic review. <i>Brain Injury</i> , 30:2 113-131	Design: SR of 12 studies (including RCTs and quantitative designs) with qualitative synthesis, involving 1943 participants (Intervention: N=840 of whom N=134 (16%) with stroke; Control: N=1103 of whom N=49 with stroke (4%)). Participants with non-progressive acquired brain injury including stroke, working pre-injury. Age range: 16-71 years. Diversity in disability severity. Settings: outpatient, rehabilitation centre, community	Intervention categories: 1. work-place issues, including comprehensive assessment, communication between participant, HCP, employer to identify barriers and facilitators and plan strategy, counselling, emotional support, coping strategies, fatigue management with input from HCP	RTW, including full-time/part-time military/ civilian employment	Strong evidence from 2 high-quality RCTs with a total of N=103 participants (including N=86 with stroke) that interventions focused on work-place issues combined with patient education and coaching are effective: - one RCT reported OR for RTW at 6 months =5.2 (95 CI 1.8-15.0, p<0.0001) - one RCT reported N employed in Intervention: Control group= 7/12: 4/11 (p<0.0001)	+ Acceptable quality Review included a range of populations with non-progressive ABI, a wide range of study designs, interventions and outcomes. The level of heterogeneity meant that findings could not be pooled and were analysed qualitatively. Only studies considered of sufficient quality were reported. Quality appraisal was transparent. Excluded studies were not

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		workplace (USA), workplace (South Africa)	<p>or social worker where needed</p> <p>2. patient education and coaching, including education about BI, goal setting and coaching, personal advocacy and partnership development</p> <p>3. activity limitations to enhance RTW skills training</p> <p>4. cognitive rehabilitation</p> <p>5. work placement with training and support</p> <p>6. combinations of the above</p> <p>Amount: 1 hour pw for 6 weeks (except for assessment: min. 4 hours), alongside usual care; every 2 weeks plus 3 case conferences, average total number of hours 10 over 6 months</p>			listed in the paper but information could be obtained from the author. No evidence that publication bias was assessed.
257	M. V. Ntsiea et al. (2015). The effect of a workplace intervention programme on return to work after stroke: a randomised controlled trial. <i>Clinical</i>	<p>Design: RCT</p> <p>Participants: N=80 (Intervention N=40; Control N=40), employed before stroke, independent in ADL after stroke. Mean age (SD) 45 (8.7) y; mean time post stroke (SD) 4.6 (1.8) weeks; M:F 41:39. Educational level varied between</p>	<p>Intervention:</p> <p>- dose: 1x per week for 1 hour per session (except for work skill assessment sessions which took a minimum of 4 hours) for 6 weeks.</p>	<p>Rate of RTW. Work was defined according to Saeki and Toyonaga (2010) and Vestling et al. (2003), including part time and full time work, paid work, with no limitation on the amount of working hours,</p>	<p>Odds of RTW in Intervention compared to Control group: OR 5.2 (95% CI 1.8-15.0)</p> <p>RTW at 3 months:</p> <p>- Intervention group: n = 11 (27%)</p> <p>- Control group: n=5 (12%) (P <0.13).</p>	<p>+</p> <p>Acceptable</p> <p>Generally a well-conducted study, but differences at baseline noted in ADL and mobility (not clinically relevant, side of hemiplegia, and other</p>

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	rehabilitation, 29:7 663-673	final year (primary school) and degree. Stroke severity not reported. Setting: Participants' workplaces and 3 hospitals with stroke rehabilitation facilities in South Africa.	- content: individualised. Assessment using Therapist Portable Assessment Lab and administration of the job content questionnaire; intervention planning; interviews with participant, employer, HCP; vocational counselling and coaching; emotional support; adaptation of the working environment; advice on coping strategies to compensate for mobility and upper limb functional limitations, and fatigue management; work adaptations; progression. - setting: participants' workplace - usual care: general activities to improve impairments and activity limitations and prepare the stroke survivor for return home. CG intervention: - Content: Usual care only . Also continued with usual stroke rehabilitation at the	cater for employees and employers, for those who had workplace adaptation and those who had a new job description. ADL: Barthel Index Mobility: Modified Rivermead Mobility Index Cognition: Montreal Cognitive Assessment QoL: Stroke Specific Quality of Life Scale Assessed: baseline, follow up at 3 and 6 months	RTW at 6 months: - Intervention group: n = 24 (60%) - Control group: n=8 (20%) (P <0.001). Significantly greater improvements in ADL (at 6 months) and mobility scores (at 3 and 6 months) in the Control group compared to the Intervention Group; no significant between-group differences in any other outcomes.	demographic variables). Stated that logistic regression used to account for these differences, but not clear from analysis. Note: This study was set in the economic and cultural context of South Africa, therefore findings cannot be generalised to other countries due to differences in employment legislation and social security systems

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			hospital (inpatient and outpatient) provided by the physiotherapist and occupational therapist (with speech therapist and/or social worker when necessary). - Dose: not reported - Setting: not in the workplace			
257	M. V. Ntsiea et al. (2015). The effect of a workplace intervention programme on return to work after stroke: a randomised controlled trial. <i>Clinical rehabilitation</i> , 29:7 663-673	Setting: Gauteng province, South Africa Design: RCT with 3 & 6 month follow-up Subjects: Previously employed stroke survivors; aged 18-60; employed in 'formal work sector' prior to stroke; <8 weeks post-onset of stroke; Barthel >12; independent in ADLs prior to stroke; willing to RTW. Participants randomised: n=80; mean age 45; male 51%; Occupation: administrator (34%, n=27), domestic worker/shop packer (23%, n=19); blue collar (55%, n=44) - no significant between-group differences; physically demanding work: (57%, n=46) - no between-group differences.	6-week workplace intervention (workability assessments; workplace visits by several therapists) tailored to each participant's functional ability and workplace challenges Wk 1: assessment; Wk 2: interview (SS, employer); Wk 3: work to address barriers identified; Wks 4-6: Continuation of the intervention, progress monitoring, making necessary adjustments. Done in workplace. Continued usual therapy at hospital	Primary: rate of RTW (bespoke questionnaire); Secondary: ADL (Barthel index (BI)), mobility (Modified Rivermead Mobility index), global cognitive function (Montreal cognitive assessment (MoCA)), QoL (stroke Specific Quality of Life Scale)	RTW: 3 months Intervention group (IG) 27% n=11, Control group (CG) 12% (n=5); 6 months: IG 60% (n=24), CG 20% (n=8); (P <0.001). IG had 5.2 times greater odds of RTW at 6 months than CG. BI & MoCA: For every unit increase in 6-month BI & MoCA, likelihood of RTW increased by 1.7 & 1.3 respectively. Full-time: 97% (n=30) returned to full-time employment. Adjustments: job description changed: 55% (n=17); 'work adaptations': 23% (n=7). ADL: at 6-months follow-up mean score for IG & CG was >19 (indicating independence). QoL: scores not significantly different between groups; but at 6-months SS who RTW had better QoL than those with no RTW (P = 0.05)	Low quality Difference between groups (statistically significant): IG: left hemiplegia; better educated; better paid; no helper at home

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258	A. Ost Nilsson et al. (2020). Being a co-worker or a manager of a colleague returning to work after stroke: A challenge facilitated by cooperation and flexibility. <i>Scandinavian journal of occupational therapy</i> , 27:3 213-222	Design: qualitative exploratory design. Semi-structured interviews undertaken twice as RTW programme was ongoing. All interviews but two were conducted individually. Participants: 11 persons (7 co-workers and 4 managers) of a colleague with mild or moderate stroke (median age 52 years at stroke onset), who participated in a person-centred rehabilitation programme targeting RTW. Setting: representing various types of work and employment backgrounds e.g. manufacturing, health care, education, transport, services.	Described in Ost Nilsson et al. (2017)	N/A	16 interviews with a total of 11 participants with experiences from the RTW process for 7 persons with stroke. Common theme: the challenge of being a co-worker/ manager to a colleague with stroke during the RTW process. Three categories: (1) the emotional challenge of being a supportive co-worker or manager, (2) the challenging experience of having too much responsibility, (3) the challenge of being supportive despite a lack of knowledge.	N/A SIGN checklist
259	A. Ost Nilsson et al. (2017). Experiences of the return to work process after stroke while participating in a person-centred rehabilitation programme. <i>Scandinavian journal of occupational therapy</i> , 24:5 349-356	Design: qualitative exploratory study. Semi-structured interviews undertaken twice : 2-3 weeks after beginning the vocational training and about 10 weeks later (after the 3-month vocational training). Participants: N=7 (5M, 2F) with mild or moderate stroke. Median age 52 years at stroke onset (40–57 years). Time between stroke onset and starting the vocational rehabilitation programme: 4.5 to 14 months (median time 7.5 months). All were on full-time sick leave. Setting: participants' work places.	Intervention description: prior to the 3-month person-centred vocational training: a planning period in collaboration with employers and social insurance officers. Vocational training included individual advice regarding strategies of how to handle the consequences of stroke, information to employers and co-workers, regular visits at the work place by the coordinator and	N/A	Three categories: 1. Increasing knowledge provided a compass to follow. Sub categories: 1.1 Knowledge of consequences after stroke contributed to a realistic goal for the future 1.2 New strategies brought possible lines of actions to navigate towards the goal. 2. Communicating with all actors created a road map to stay within. Sub categories: 2.1 Straightforward communication created structure for the process	N/A SIGN checklist

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			collaboration with other actors.		2.2 Using various strategies increased clarity in the communication 3. Being a part of the process provided opportunities to choose which way to go to reach the goal. Sub categories: 3.1 Participating in regular meetings at the work place contributed to an individual tailored pathway 3.2 Trying various tasks and working hours contributed to a suitable pathway.	
260	K. Radford et al. (2020). Describing Return to Work after Stroke: A Feasibility Trial of 12-month Outcomes. <i>Journal of rehabilitation medicine</i> , 52:4 jrm00048	Design: Retrospective description of work metrics from sample of participants in a feasibility randomised controlled trial (RCT) Participants: N=46 (Intervention N=23, Control N=23). Male % 74-83%. Mean age (SD) 53.8 (12.6) to 58.3 (12.7) years. Stroke severity: minor to moderate-severe. Settings: participants' homes, workplaces, Job Centres.	Early Stroke Specialist Vocational Rehabilitation (ESSVR) Content: - RTW process (24%) - Work preparation (18%) - Current issues (16%) - Dealing with psychological issues (8%) - Mobility (7%) - Cognitive and executive skills (4%) - Liaison Intervention start: 10-53 (mean 30, SD 12) days post stroke. Number of sessions: mean of 10 (SD 7, range 1-25) Average session duration: approximately 1 hour.	Work defined as: at least 1 h per week of paid work or unpaid (voluntary) work or full-time education. Voluntary work excluded family caregiving or housework. Work metrics: status, hours worked, time taken to RTW, financial impact, work satisfaction, role, workplace adjustments. Data collected at baseline (mean (SD) 21.4 (17.2) days post stroke), 3, 6, 12 months.	Working fewer hours than before stroke: - IG: 6 at 3 months, 9 at 6 months, 4 at 12 months - CG: 5 at 3 months, 7 at 6 months, 3 at 12 months Working the same hours as before stroke: - IG: 3 at 3 months, 3 at 6 months, 6 at 12 months - CG: 4 at 3 months, 4 at 6 months, 2 at 12 months Working more hours than before stroke: - IG: 1 at 12 months - CG: 1 at 12 months Workplace accommodations: - IG: 18 at 3 months, 21 at 6 months, 14 at 12 months - CG: 14 at 3 months, 24 at 6 months, 5 at 12 months Income reduction:	Unable to judge without reference - Radford KA, Sinclair EJ, Terry J, Walker MF, Drummond A, Lincoln NB, et al. Return to work after stroke: a feasibility randomised controlled trial and economic analysis. Clin Rehabil. Available from: https://eumass.eu/wp-content/uploads/2019/09/Radford-Early-stroke-specific-vocational.pdf . The aim of this study was not to compare work metrics between study groups, although descriptive data were provided for some of the metrics.

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					<p>- IG: mean annual income £17,069; £10,572 at 3 months, £8,486 at 6 months, £9,893 at 12 months</p> <p>- CG: mean annual income £20,108; £11,481 at 3 months, £12,073 at 6 months, £4,525 at 12 months</p> <p>Living on benefits at 12 months:</p> <p>- IG 3</p> <p>- CG 4</p> <p>Work satisfaction: Greater in IG compared with CG (figure provided but no numeric data reported)</p> <p>Figures provided on other metrics but no numeric data reported</p>		
260	K. Radford et al. (2020). Describing Return to Work after Stroke: A Feasibility Trial of 12-month Outcomes. <i>Journal of rehabilitation medicine</i> , 52:4 jrm00048	RCT; equivalence trial; n=46 patients aged over 16yrs in paid or voluntary work or education at the time of stroke and intending to return to work (RTW)	Early stroke vocational rehabilitation (VR) (intervention n=23) which commenced a mean 21.4 days (SD 17.2) post-stroke versus Usual Care (Control Group n=23)	To describe RTW after stroke using work metrics including work status, working hours, workplace accommodations and costs, which were extracted from trial outcomes gathered by postal questionnaire at 3, 6 and 12 months post-randomisation. Baseline data was gathered face to face (mean 21.4 days (SD 17.2) post-stroke). Questionnaires included standardised measure of	Two-thirds (n=31; 67.4%) returned to work within 12 month period following stroke; 9 (19.6%) did not RTW during 12 month follow-up (intervention group : n=4; control group: n=5). Participants took a mean of 90.2 days to RTW. One-third of participants who were employed full time at stroke onset were working full time at 12 months post-stroke. More intervention participants than control participants reported satisfaction with	+	Few details and unable to note the method of randomisation or concealment methods used. Measurement of working hours based on best estimates. Study omitted to measure type and size of employer enterprise and other employer-related factors which can be determinants of RTW outcome success. Despite a high overall rate of return, the vocational status of participants changed dramatically with few achieving

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				work ability (Work Limitations Questionnaire) and productivity (Work Productivity and Activity Impairment Instrument) and bespoke questions on work, including work status, salary and workplace accommodations.	work at both 6 and 12 months post randomisation. Most participants who returned to work reported working fewer hours than before their stroke and most participants returned to the same role with an existing (pre-stroke) employer. Workplace accommodations were more common among intervention group participants.	pre stroke working hours and others moving roles. Small number of participants with no data available on 13%.
261	K. A. Radford et al. (2020). An individually randomised controlled multi-centre pragmatic trial with embedded economic and process evaluations of early vocational rehabilitation compared with usual care for stroke survivors: study protocol for the RETurn to work After stroKE (RETAKE) trial. <i>Trials</i> , 21:1	RCT; parallel group, n=760 stroke survivors and carers; multi centre trial from 20 NHS Stroke services; UK based.	Early Stroke Specialist Vocational Rehabilitation (ESSVR) plus Usual Care (UC) n=420 v UC (n=340) alone. Study over 12 months post randomisation.	Primary outcome: self reported RTW and job retention at 12 months (minimum 2 hrs per week)post randomisation. Secondary outcomes include:(a)investigate whether the intervention leads to improvement in self-reported work outcomes including a RTW with the same employer, number of hours worked per week and number of days worked. (b) investigate whether the intervention improves mood, physical function, participation, health-related quality of life, work self-efficacy and post-stroke confidence (c) determine whether the intervention changes overall health and social care resource (d) estimate	Recruitment for the study halted in 2018 due to challenges in trial delivery and the impact of the COVID-19 pandemic. Recruitment completion date under review	++ Randomisation method used reliable using computer generated methods. Concealment method used computerised allocation systems and automated email. All planned outcomes were to be measured in a reliable and valid way however as recruitment was halted, unable to comment on treatment and control groups data, drop out rates, and results comparable across sites. High quality methods in place to limit any bias however limitation is that no recruitment as yet has taken place.

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				the likely cost-effectiveness of the intervention compared to UC alone (e) establish whether the intervention reduces carer burden. Self reporting questionnaires administered by post and online at 3, 6, and 12 months follow-up.		
262	S. L. Scott & S. Bondoc (2018). Return to Work After Stroke: A Survey of Occupational Therapy Practice Patterns. <i>Occupational Therapy in Health Care</i> , 32:3 195-215	Design: descriptive study, consisting of a survey followed by semi-structured interviews Participants: N=119, 95% occupational therapists, 66% with >10 years' experience Setting: 33 USA states nationwide, range of settings (mostly outpatients) with a diverse caseload, urban/suburban/ rural settings.	N/A	N/A	Response rate: N=119 (3%); N=9 participated in interviews 74% of practitioners in outpatient vs. 31% of those in inpatient settings specifically addressed RTW. Re. practice patterns: predominantly restorative approach focused on deficits in cognitive and motor skills related to work demands. Participants reported low perceived competencies and usage of a client-centered, multidimensional approach, informed by theory and evidence, that addresses client factors and performance skill impairments, as well as work-specific skills development; coping and psychosocial adjustment; appropriate accommodations and modifications of work-related tasks and environment; ongoing education and collaboration with employers,	N/A SIGN checklist 3% response rate -> questionable validity

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					community agencies, and other support systems.	
262	S. L. Scott & S. Bondoc (2018). Return to Work After Stroke: A Survey of Occupational Therapy Practice Patterns. <i>Occupational Therapy in Health Care</i> , 32:3 195-215	Descriptive / observational study; USA based across 33 states; n=119 respondents working across in-patient (31%) and out-patient (74%) settings.	Study sought to describe the practice patterns and perceived competencies of Occupational Therapy Practitioners in the provision of RTW services for patients post-stroke using a survey with 4 and 8 week follow-up, and final invitation to participate in semi-structured telephone interview to further explore experiences and perceptions.	Survey sought to capture various aspects of occupational therapy practice relevant to RTW after stroke and the semi-structured interviews sought to further understand the perspectives of practitioners regarding the barriers and enablers to RTW services provision.	Respondents focused predominantly on the cognitive (82%), physical (74%) communication (72%) and emotional/psychological (63%) demands of work and less on the social environment (45%), employer support (48%) and openness to accommodations (37%). Respondents also regularly evaluate biomechanical, sensorimotor, visual perception and cognitive skills (>75%), and not as frequently, psychological functions (61%). Participants whose caseload is >50% stroke survivors and those who provide RTW services report greater use of employer-centered interventions. Those who provide RTW service and those who work in out-patient settings report providing more advocacy-focused interventions. Practitioners with >10 years experience generally reported having greater skill in the use of occupation based, skill-focused and employer-centered interventions than those with lesser practice experience. Additionally, practitioners who hold a	N/A As this study was identified as an 'observational study' using the SIGN algorithm, no checklist was required. Limitations of the study however were noted that although there was a large sampling (n=4000 practitioners) the low response rate (n=13%) in addition to predominantly outpatient based sample, limits the generalisability of this study. The USA based study also indicates that practitioners who hold a bachelor-level entry degree also reported greater skill in occupation-based and remedial/restorative approaches compared to those with other entry level degrees however as this study was conducted in the USA, and although findings are relevant to the UK, clinicians should be mindful of the differences in education provision and degree programmes.

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					bachelor-level entry degree also reported greater skill in occupation-based and remedial/restorative approaches compared to those with other entry-level degrees. The study suggests that there may be a critical gap in occupational therapy practitioners' knowledge and skills for addressing RTW and provides some insight into practice patterns with an apparent lack of integration of evidence-based, theory informed and multidimensional approach to RTW services for stroke survivors. The study indicates there may be a high need for further development of professional knowledge and skills to be effective providers of distinctive RTW services for stroke survivors.	
263	C. H. van Dongen et al. (2018). Short-Term and Long-Term Outcomes of a Vocational Rehabilitation Program for Patients with Acquired Brain Injury in The Netherlands. <i>Journal of occupational rehabilitation</i> , 28:3 523-530	Design: descriptive cohort study, with retrospective review of medical records and a follow-up questionnaire Participants: All patients with Acquired Brain Injury participating in a usual care VR program in the Netherlands (n=38/58 (66%) with stroke), identified from one centre's registry. Inclusion criteria: non-progressive ABI, being employed before ABI, motivated to get back	A 4-month multidisciplinary VR programme, delivered by a team of professionals i.e. rehabilitation specialist, occupational therapist, social worker, neuropsychologist and, if needed, a	Collected at 2 time points: - short term: directly after the end of VR programme. Data collected from: medical records, neuropsychological assessments, minutes of meetings related to the VR programme. - long term: 3-6 years after the end of VR programme. Data collected from a bespoke	At the start of the VR program: N=15/58 (26%) participants had started working, mean 11.1 (SD 7.5) hours per week. Short term: N=50/58 (86%) achieved RTW immediately after VR, working for mean 21.0 (SD 8.0) hours per week (60% of pre-ABI hours). Tasks were adjusted for N= 48 (96%). N=8 (14%) did not RTW. Reasons:	0/- Unacceptable This is a service evaluation involving a single cohort. It provides a description of a VR usual care model in the Netherlands, and outcome data pertaining to a select sample (see inclusion/exclusion criteria), 26% of whom had already achieved RTW. No conclusion can be

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		<p>to work and having an employer willing to participate in the VR program. Exclusion criteria: being dependent on other people in ADL, having a mental status that prohibits normal social contacts with colleagues or having a physical status interfering with the possibility to travel to or perform work. Unable to extract stroke-specific clinical demographic data. Setting: rehabilitation centre and work places in the Netherlands</p>	<p>speech therapist or physical therapist. The MDT collaborated with the other stakeholders, including the participant and their partner/important other, employer, occupational physician and a co-worker. Written permission was sought to share confidential information. VR programme: 6 steps, including: (1) identifying participant's eligibility, disabilities and RTW wishes, (2) meeting to discuss RTW demands, expectations and opportunities, and consensus and commitments on tasks and working hours; (3) task-orientated training on the job with continuing support from MDT and co-worker; (4) evaluation of experiences and adaptation of tasks and hours; (5) progression with continued support from MDT; (6)</p>	<p>questionnaire re. work status, hours at work (quant.); task adjustments, reasons for not continuing paid work - of applicable (qual.) Note: different definitions of RTW for short-term and long-term follow-up were used. - RTW at the end of the VR program was defined as 'performing useful tasks for the former employer', which does not reflect earning capacity. - RTW at follow-up was defined as 'performing paid work'.</p>	<p>elimination of the job during reorganization (n = 1); cognitive functioning disorder (n = 2); low physical tolerance (n = 3) and inability to adjust tasks by employer (n = 2). Long term (mean time to follow-up 4.4 (SD 0.9) years): N=28/44 (64%) available for follow-up (or N=28/58 (48%) originally included) in paid RTW, working for mean 26.5 (SD 10.8) hours pw; 5.9 h less than pre-ABI (p < 0.01), and 5.3 h more than immediately post VR (p < 0.01). Missing data on task adjustments. Of the 16 participants working directly after VR, but were not working in a paid job at follow-up, N=5 reported reasons that did not relate to their work disabilities after ABI.</p>	<p>made on the effects of the intervention. Note: Study undertaken in the Netherlands, where clinical practice and employment law are likely to be different from the UK (e.g. Dutch law states that both the employer and the employee are responsible for the RTW process during the first 2 years of sick leave).</p>

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			discussion on prognosis of RTW and referral to occupational physician (usual care).			
263	C. H. van Dongen et al. (2018). Short-Term and Long-Term Outcomes of a Vocational Rehabilitation Program for Patients with Acquired Brain Injury in The Netherlands. <i>Journal of occupational rehabilitation</i> , 28:3 523-530	Setting: Dutch rehabilitation centre Design: 'descriptive cohort study' to evaluate effect of a VR programme (chart review; follow-up questionnaire) Subjects: ABI; participated in intervention (Jan 2007-May 2010). Participants: n=58; mean age 48 years; male n=33 (57%); highly educated/trained n=48 (83%) stroke n=38 (66%); blue collar employee: n=27 (47%)	16-week round table vocational rehab (VR) MDT (OT, Physio, Neuropsychologist, social worker) programme led out of Rijnlands Rehab Centre. Programme inclusion: expressed need for VR; non-progressive ABI, employed pre-ABI; motivated to RTW; willing employer; independent in ADL; psychologically able to socialise; physically able to travel. Programme inclusion: expressed need & motivation for VR; non-progressive ABI; employed pre-ABI; willing employer; independent in ADL; able to socialise; able to travel. Intervention content: assessment; round table 'stakeholder' meeting 1: discussion of demands, expectations and	RTW (in short-term analysis defined as 'performing useful tasks for an employer'; in long-term analysis: 'performing paid work yes/no'); hours per week and task adjustment - directly after the programme extracted from meetings' minutes therefore determined by VR team and employer; at follow-up - 'patient' self-report	Short-term: At VR start of n=15 (26%) had started working 11.1 (SD 7.5) hours pw. At week 16 RTW: n=50 (86%), task adjustment for n=48 (of the 50, 96%), hours pw 21.0 (SD 8.0) Long-term (3-6 years (4.4, SD 0.9) self-report): participants: n=50 (86% of original cohort); RTW: n=28 (64% of those working at wk16); hours pw 26.5 (SD 10.8) NB: 5.9 hours pw less than these 28 patients worked before ABI (p < 0.01), and 5.3 hours per week more than immediately post VR program (p < 0.01); task adjustment: not reported (missing data, inconsistent questionnaire responses). 11 (85%) of the 16 participants working at end of VR prog but not working in paid employment at follow-up, cited reasons relating to post-ABI work disabilities	not a cohort study rather a non-comparative study (case series) so no SIGN methodological checklist applicable. Methodological concerns: not a comparative study; sample bias i.e. not limited to stroke and highly educated/trained; outcomes measures: poor design of questionnaire; the effectiveness of VR on long-term (4.4 years, mean) RTW is questionable, given specific context & resources, and concerns mentioned above; cost-effectiveness, and acceptability (employee and employer) would need to be evaluated

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
			possibilities of RTW; 8-week task oriented VR training 'on the job' with co-worker plus OT support for both and other MDT input; meeting 2: what worked/what didn't & decision about continuation of programme/adaptions required (hours and tasks); 8-week VR (if approp) with MDT input; meeting 3 (wk 16): RTW prognosis, support from rehab centre stops, any further support provided by an occupational physician (usual care)			
264	J. M. van Velzen et al. (2016). Evaluation of the implementation of the protocol of an early vocational rehabilitation intervention for people with acquired brain injury. <i>Disability and rehabilitation</i> , 38:1 62-70	Design: pre-and post-process evaluation. Participants: rehabilitation professionals involved in inpatient and outpatient treatment of patients with ABI. Data of 23 patients (10M:13F) with non-progressive ABI were available for process evaluation, incl. N=5 with TBI, not stated how many had a stroke. Primary issue: cognitive impairment. Inpatients were included if they were working pre-ABI, outpatients were included if RTW was one of the rehabilitation aims.	See van Velzen et al.(2015)	1. Feasibility of the protocol: (1) by testing the usability on a process level by meeting SMART goals, (2) through the fulfillment of expectations about the usability of the rehabilitation professionals, and (3) through the fulfillment of the expectation about the usability of the patients, employers, and occupational physicians. 2. Promoting factors and barriers	N=9 rehabilitation professionals completed the questionnaire at two time points. N=9 employers, N=6 occupational physicians, N=10 people with ABI completed the questionnaire. 1. Feasibility: 8/13 of the performance goals were achieved, 3/12 achieved at the correct timing. Most professionals experienced the forms as useful but problems were experienced with: the timing	SIGN checklist: N/A

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
		Setting: rehabilitation centre in the Netherlands.		3. Perceived effectiveness of the EVR protocol in facilitating the return to work in people with ABI re. the EVR protocol's: (1) capacity to provide insight into the outcomes of returning to work, (2) effectiveness in encouraging people to return to work earlier, (3) potential to enable return to work for more people.	<p>of EVR steps, which could not be fulfilled in practice; problems with allowing the individually formulated goals for vocational rehabilitation to be incorporated into the regular rehabilitation process.</p> <p>2. Promoting factors and barriers: Main facilitators: All respondents cited the structured protocol. People with ABI cited the person-centred approach. Main barriers for professionals: time required, lack of familiarity, practical problems. For people with ABI employers, occupational physicians: quality and quantity of contacts, connection between work training and work requirements. N=32/34 participants perceived the protocol as being suitable facilitating RTW after ABI.</p> <p>3. Perceived effectiveness: - All rehabilitation professionals expected that the EVR protocol could help gain insight into the RTW process outcomes - All employers and occupational physicians, and 8/ 10 people with ABI expected that the EVR</p>	

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
					protocol could help people with ABI to return to work.	
264	J. M. van Velzen et al. (2016). Evaluation of the implementation of the protocol of an early vocational rehabilitation intervention for people with acquired brain injury. <i>Disability and rehabilitation</i> , 38:1 62-70	Setting: Dutch rehabilitation centre; Design: Evaluation of feasibility - ? Feasibility study, questionnaires; Participants: n=23 'patients' - unclear if any had had a stroke; ABI not defined. n=9 rehabilitation professionals, n=9 employers, n=6 occupational physicians	EVR (Early VR) protocol content: Stage 1: assessment for programme eligibility; Stage 2: assessment of 'gap' between abilities and requirements of the work; Stage 3: Work training; Stage 4: handover to employer and occupational physician	Feasibility: 13 SMART goals and ? questionnaire or interview or ... (unclear); Facilitators and challenges: participants were 'asked'; Perceived effectiveness of the protocol: questionnaire (unclear)	SMART goals: range of achievement 0-100%; most problems occurred in setting & fulfillment of VR goals, & info transfer at EVR end. Timing: 3 of the 12 goals were achieved. Most problems occurred in timing of the intake performed by the VR specialist, and timing of investigation of the gap between the patients' abilities and work. Expectations (rehab pros): timing of steps problematic; problems with fitting individual's goals into usual rehab practice Expectations: patients: 7/10 reported their goals were fulfilled; 2/10 partially fulfilled; employers: 5/10 expectations for employees were met; 3/10 expected RTW - only 1 did; occupational physicians: where RTW had been expected expectations not met in 2 cases and met in one; employers expectations mixed response in relation to expectations for themselves e.g. guidance and for employees e.g. RTW. Promoting factors: professionals: process (protocol, specialist input), info,	Protocol developed with expert MDT input; employees/patients and employers not involved in the design. The paper reports feasibility testing of the protocol (intervention and research processes). Reporting unclear in places. Unclear whether any stroke survivors were involved.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
					support, learning; patients: patient-centredness Barriers: rehab professionals: protocol timing; everyone else: quantity and quality of contact (? professional input); disconnect between work training and job requirements	
265	J. M. Van Velzen et al. (2015). Early vocational rehabilitation after acquired brain injury: A structured and interdisciplinary approach. <i>Journal of Vocational Rehabilitation</i> , 42:1 31-40	N/A; description of the EVR protocol used in ID#160	The EVR protocol consists of 4 stages: 1) orientation of the rehabilitation team towards the patient's work (incl. situation before ABI, educational level, goals; decision whether starting VR is medically justified; employer and occupational physician; permission to exchange information re. EVR amongst stakeholders). 2) investigating the gap between the patient's abilities and work (incl. listing possible job requirements and their relevance to the patient; feedback by EVR specialist to rehabilitation team about workplace visit; patients' ability to meet relevant job	N/A	N/A	N/A SIGN checklist

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
			requirements); 3) work training; and 4) finalising EVR (inc. overview of steps taken during EVR, advice about continuing RTW, availability of possible resources; information re. transfer of VR perspective to the person with ABI, employer, occupational physician).			

Additional evidence assessed

Rates of return to work (RTW) after stroke are low: a meta-analysis of 52 studies from across the world estimates that at 1 year after stroke, on average 55.7% (95% CI 51.3 to 60.0%) and at 2 years on average 67.4% (95 CI 60.4 to 74.4%) have returned to work after stroke (Duong et al., 2019). Within this meta-analysis, only one study was located in England, where the RTW rate was 35.3% at 1 year after stroke (Busch et al., 2009).

Work is a core element of participation in life roles, and an integral part of the World Health Organisation's International Classification of Functioning, Disability and Health. Not being in work is associated with health risks that are worse than those associated with heart disease (Waddell and Aylwood, 2005), as well as reduced quality of life and poorer psychosocial outcomes (Robison et al., 2009; Busch et al, 2009). RTW is an important goal for many people after stroke - albeit not for all. The most important motivational factors for RTW in a survey of stroke survivors in the US include: being productive, feeling good about oneself, feeling competent and independent (Hartke and Trierweiler, 2015). Benefits of RTW include larger perceived improvements in quality of life between discharge and 1 year follow-up, compared to those who do not RTW after acquired brain injury (Matérne et al., 2018). RTW within 1 year after stroke is associated with better perceived general health, less pain and depression at 1 and 5 years, compared to those not returning to work (Westerlind et al., 2020). Furthermore, those in work report higher perceived participation (including family roles, social life and relationships) and autonomy compared to those who are not in work after stroke (Westerlind et al., 2020).

The process of RTW is complex, as it depends on a range of interacting factors and the engagement of different stakeholders (Schwarz et al., 2018). Meta-syntheses on barriers and facilitators to RTW after stroke identify personal factors (including impairments, personal coping strategies,

the meaning of work and motivation for RTW); workplace factors (including the preparatory environment, job demands, workplace adaptations, disability management, social support); and factors related to rehabilitation services (including availability, accessibility, appropriateness) (Schwarz et al., 2018; Brannigan et al., 2017). Those most likely to RTW after stroke include those who are independent in ADL after stroke, irrespective of the type of stroke (Donkers-Cools et al., 2016). A survey of stroke survivors' perspectives on RTW after stroke in the US shows that the most common barriers to RTW are physical impairments, fatigue and cognitive impairments (Hartke and Trierweiler, 2015). A meta-synthesis of facilitators to RTW after acquired brain injury identifies the following four key concepts: empowerment (e.g. through shared decision making); self-awareness of one's potential, strengths and weaknesses in a work situation; and motivation for and facilitation of RTW (e.g. through job coaching) (Frostad Liaset et al., (2016). 'RTW' as an outcome varies widely between studies (Duong et al., 2019), while clinical experience indicates that 'RTW' varies between individuals, and that its meaning for an individual may change over time. Given the complexity of RTW, many people with stroke require specialist advice and support.

Vocational Rehabilitation (VR) is a neglected area within the NHS however, and RTW remains an unmet need for many who require it (BSRM, 2021). Many different models of VR following brain injury have been identified (Tyerman et al. 2012). According to the BSRM (2021):

'The core of the VR intervention is a co-ordinated plan supported by all those working with the employee to optimise their work capability' (p. 7).

The BSRM (2021) distinguishes 3 levels in providing VR services:

- Level 1, the remit of any clinician, involves promoting RTW and signposting to relevant sources of information and support.
- Level 2, the remit of any rehabilitation service, involves providing tailored information, guidance and support for those with issues that are relatively straightforward
- Level 3 is the remit of specialist VR services for those with the most complex difficulties.

The National Stroke Service Model for England (2021) incorporates a similar pyramid of services.

Furthermore, the BSRM (2021) recommends 10 different elements in a VR intervention: 'initial assessment, information provision, generic work skills, specific work skills, job identification, applying for jobs, liaison with work and other services, return to work, supportive work exit and the final review' (p. 7). Additionally, based on a qualitative meta-synthesis of the views of people with stroke, Brannigan et al. (2017) recommend that VR should: address the consequences of stroke; provide long-term support including access to treatment for ongoing physical, emotional and behavioural difficulties; incorporate education for those affected by stroke as well as work colleagues and managers re. their role in successful RTW; and be delivered by an integrated multi-disciplinary team.

The importance of a coordinator in facilitating RTW after stroke is highlighted in several studies: coordinators may be able to provide ongoing guidance and support to the person affected by stroke (Öst Nillson et al., 2017) but also facilitate communication between different stakeholder groups (ibid.) and align their diverging perspectives and agendas (Hellmann et al. (2016).

RTW, given its complexities, requires appropriately trained staff; Occupational Health is rarely sufficient for people with complex needs after stroke. Appropriate specialist training is needed to engage the stroke survivor in timely conversations about work and provide the right intervention in the right place at the right time, involving all relevant stakeholders. This requires a working knowledge that includes the relevant legalities surrounding RTW. However, studies on professional practice have highlighted shortcomings in the competencies of healthcare staff (Scott and Bondoc, 2018) and the need for mentoring regarding the delivery of VR interventions (Craven et al., 2021).