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## Return to work after stroke: a nursing state of the science.

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Cover Title: Return to Work

Table 1 – Primary Studies of Return to Work after Acute Ischemic Stroke

Key words: ischemic stroke, employment, return to work, acute cerebral infarction

Subject Headings: Stroke, [45] Acute Stroke Syndromes, [127] Behavioral/psychosocial - stroke

Word Count: 2490

## Introduction

There is a lack of research related to return to work (RTW) after acute ischemic stroke. Historically considered a disease of the elderly, acute ischemic stroke studies have not routinely used return to work as an outcome. Major stroke trials have not routinely collected this data as an endpoint. However, the mean age for acute ischemic stroke (AIS) has declined to 69 years of age, while the incidence in patients under the age of 55 has increased to 19%<sup>1-3</sup>. Changes in retirement age have also affected RTW as a consideration in stroke patients. Failure to RTW after recovery from AIS has been associated with negative health outcomes such as increased cardiac disease, depression and higher rates of mortality and social consequences such as isolation and poor coping ability<sup>4</sup>.

Return to work has not been extensively studied in the AIS population. However, with an aging, yet active population and an increased awareness of AIS in younger patients, the relevance of RTW is becoming increasingly important. According to current research, up to 50% of stroke survivors are likely to return to work if they can walk, their cognition is relatively intact, they were previously employed, are younger than the mean age and have a “white collar”

position<sup>5-9</sup>. The physical, psychological, social, financial and economic consequences associated with loss of productivity for patients with AIS and their caregivers are reported to cost billions of dollars each year<sup>10</sup>. With an increasing prevalence of survivors, the ability to RTW has gained significant importance as an area for further research.

The purpose of this review was to provide nurses working with stroke patients empirical evidence related to return to work outcomes. The evidence used came from current studies of AIS from January 2008 to May 2014. This time frame was used to capture the most recent evidenced based practice and research studies that would build on top of the systematic review previously done including years 1962-2007<sup>11</sup>.

#### Literature Search

A literature search of the databases MEDLINE and Cumulative Index of Nursing and Allied Health Literature (CINAHL) was done utilizing the process as defined by Whittemore and Knafl<sup>12</sup>. The following key words were used: “employment”, “return to work”, “stroke”, “acute ischemic stroke”, “cerebral infarction” and “outcomes” for years 2008-2014. References were cross-checked from studies that were selected to find research that might fit the criteria for evaluation. Selection criteria included: primary studies on return to work outcomes after acute ischemic stroke and English language. Studies that were primarily on traumatic brain injury or hemorrhagic stroke were excluded. The appraisal method by Greenhalgh<sup>13</sup> was used to determine if the studies provided a sufficient description of methodology. Finally, a descriptive summary of the findings was completed.

#### Data Evaluation and Analysis

The database search yielded 436 articles. After excluding duplicates, case studies and reviews, 12 quantitative research studies whose primary focus was on return to work after acute ischemic stroke were reviewed. The articles are listed in Table 1.

## Key Findings

Consistent themes found in RTW after stroke are physical, social and psychiatric disabilities. Stroke severity remains one of the most consistent predictors of RTW<sup>19,23-25</sup>, as well as younger age<sup>6,8</sup>. Patients who are < 65 years of age are much more likely than patients > 65 to RTW. However, age is not a significant predictor in RTW for different age groups under the age of 65<sup>5</sup>. While stroke location has not played a strong role in predicting RTW, functional disability involving impaired activities of daily living and aphasia are significant<sup>19</sup>. The effect of co-morbidities on RTW has not been well described, however, psychiatric factors are emerging as significant factors<sup>17,18</sup>. Fatigue was found to be associated with a decreased likelihood of RTW even up to 2 years after stroke<sup>14</sup>. Psychiatric morbidity after stroke has also been shown to reduce the likelihood of RTW, particularly in patients who appear functionally intact or of limited physical disability<sup>17</sup>. Rehabilitation was found to be an important predictor of RTW. O'Brien and Wolf<sup>20</sup> reported poorer rates of RTW despite mild to no physical impairments. They concluded that vocational training may help facilitate RTW. Finally, social factors also play an important role in RTW. Many studies demonstrated improved rates to RTW for patients who are white, have white-collar occupations, higher levels of education and higher incomes<sup>7,9,15,21,22</sup>. The South London Stroke Registry showed economic context played a very significant role in RTW<sup>15</sup>.

## Discussion

The literature yielded quite a number of articles on return to work. The range of RTW varies widely from 18-69% in these studies, with a mean and median, 44% and 53% respectively. Very similar themes emerged from the studies that have not changed over the decades despite changes in stroke care and stroke delivery systems. Not surprisingly patients who are younger and have milder strokes have a higher rate of RTW. However, psychiatric morbidity in the form of depression, anxiety, and fatigue is emerging as a strong predictor of return to work and needs to be further elucidated<sup>14,17,26,27</sup>. Socioeconomic factors play seem to play a multifactorial role that was identified in several studies. Factors such as income, education and occupation had strong predictive properties in RTW. The interrelatedness of the three factors is frequently discussed in the literature. Patients who have higher levels of education are more likely to be in higher paying jobs that may provide more flexibility. Patients working in labor intensive jobs are more likely to be paid by the hour and for a certain level of productivity that may not be attainable or sustainable after a stroke, regardless of the person's desire to RTW. There also appears to be a significant time element that predicts RTW<sup>7,18,21</sup>. There is a reduced probability of RTW for survivors if it does not occur within the first year after the stroke<sup>7</sup>. Rehabilitation after stroke with occupational and vocational therapy has also shown to provide significant benefits to patients who may not otherwise have been able to RTW<sup>16,20,28</sup>.

There continues to be a lack of studies targeting interventions to reduce barriers to RTW after stroke. In addition the importance of evaluating the need for earlier and more intense rehabilitation and choosing patients who may gain the most benefit needs to be established. Studies should also evaluate the importance of implementing occupational and vocational rehabilitation after stroke as a significant benefit to patients.

Implications for Nurses

RTW is an attainable goal for patients after stroke and should be a consideration during hospitalization. Nurses need to advocate for the patients to help them receive the resources they may need after the acute phase of the disease process. Assessments for psychiatric morbidity should be initiated in the hospital with appropriate referrals. Nurses can also initiate discussions with patients regarding their short and long-term goals regarding work and what resources may be needed to achieve those goals. Nurses can then help guide the patients to outpatient programs that may help facilitate the transition back to work. Working in conjunction with physical and occupational therapy, nurses can help patients and families to recognize that it is not too early or ambitious to make goals for the future.

Key points to remember are: RTW is an attainable goal for stroke patients; referrals made by nursing in the hospital may increase the likelihood of RTW; and access to resources after hospitalization may be a key factor in RTW.

## Conclusion

Return to work after stroke continues to be an important milestone of recovery for patients, however is poorly understood by the healthcare community. Work has been established as an achievable outcome for stroke survivors. The importance of work to health and well-being can also not be understated. Future research studies should focus on interventions targeted at known barriers to return to work

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Table 1 Primary Research on Return to Work after Stroke

Study author year/country	Purpose of Study	Methodology/ Design	Key Findings
Andersen 2012 Denmark <sup>14</sup>	Fatigue as a factor in RTW	Cohort from prospective study; n=83	53% RTW by 1 yr; 58% by 2 yrs; higher scores on General Fatigue scale negatively correlated with RTW
Busch 2009 United Kingdom <sup>15</sup>	Determinants of RTW in multi-ethnic urban population	Cohort from prospective study; n=266	35% RTW by 1 yr; Lower RTW associated with black ethnicity, female, older age, diabetes
Gabriele 2009 Germany <sup>16</sup>	Impact of subjective perception on RTW	Prospective longitudinal study; n=60	26.7% RTW by 1 yr; Perceived functional ability positive predictor of RTW
Glozier 2008 New Zealand <sup>17</sup>	Determinants of psychiatric morbidity in younger adults and RTW after stroke	Cohort from prospective study; n=210	53% RTW; Early psychiatric morbidity within 6 months reduced probability RTW
Hannerz 2012 Denmark <sup>18</sup>	Effect of legislative change on RTW after stroke	Prospective cohort; n=19985	Legislative changes included decreasing sickness absence benefits and introducing flexi-job system. The odds of RTW improved significantly
Hofgren 2010 Sweden <sup>8</sup>	Describe employment status after 1 year	Consecutive patients n=72	18% RTW after 1 yr; reaching primary rehabilitation goals predicted RTW

Kauranen 2013 Finland <sup>19</sup>	Assess cognitive severity of stroke as barrier to RTW	Consecutive patients, n=140	41% RTW at 6mo., early cognitive deficits only significant predictor of failure to RTW
O'Brien 2010 USA <sup>20</sup>	To assess work outcomes	Consecutive patients, n=98	54% RTW at 6 mo., occupational therapy can potentially play a major role in improving work outcomes
Peters 2013 Nigeria <sup>9</sup>	Determinants of RTW in Nigeria	Consecutive patients at rehab clinic, n =101	55% RTW 1 yr; rehabilitation efforts and support programs could help optimize functional ability and improve RTW
Saeki 2010 Japan <sup>21</sup>	Determinants of early RTW after stroke	Prospective cohort study, n=253	55% RTW; predictors included male gender, independence in function, hand function; RTW occurred within first 400 days
Tanaka 2011 Japan <sup>7</sup>	To examine factors associated with very early RTW	Prospective cohort study, n=335	30% early RTW at 1 mo. Facilitating factors were mild disability, white collar occupation and continued employment while in hospital
Trygged 2011 Sweden <sup>22</sup>	To determine socioeconomic factors to predict RTW	Prospective cohort, n=7081	69% RTW at 1 yr; significantly higher probability of RTW in higher social classes