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Stroke and the Younger Adult: Recommendations for Occupational Therapy

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ABSTRACT

Occupational therapy (OT) is an integral component of the rehabilitation process for individuals who have sustained stroke. As the number of individuals sustaining and surviving stroke in the United States has consistently risen over the past decades (Bartels, 2011), it is anticipated that stroke prevalence from 2010 will have a 25% increase by the year 2030 (American Heart Association (AHA), 2011). In addition, a current trend in research has been found, indicating an increase in the incidence of stroke within the young and middle-aged, or younger, adult population between the ages of 18 and 55 years (AHA, 2011).

An extensive review of the literature was conducted with a focus on statistics, risk factors, and the impact of stroke to examine the unique effect of stroke on younger adults. Although stroke survivors at every age experience limitations in a variety of areas of occupation, the literature revealed that younger stroke survivors experience stroke differently than older survivors do (Stone, 2005b; Wolf, Baum, & Connor, 2009). As research supports the rising rates of stroke in the younger adult population and the unique impact of stroke on younger survivors, it is evident that occupational therapists will be providing more services to younger stroke survivors and must be adequately prepared to do so. Therefore, the purpose of this scholarly project is to increase occupational therapists’ awareness of this trend and provide evidence-based recommendations that are
unique to younger stroke survivors through the submission of the article, *Stroke and the Younger Adult – Recommendations for Occupational Therapy*.

The development of the content and structure of *Stroke and the Younger Adult – Recommendations for Occupational Therapy* was based off of the significant findings from the literature and guided by the Canadian Model of Occupational Performance and Engagement (CMOP-E). *Stroke and the Younger Adult – Recommendations for Occupational Therapy* includes a brief literature review with supporting evidence and recommendations unique to younger survivors for occupational therapists to use as a guide throughout the acute, inpatient, and outpatient phases of rehabilitation. In addition, the article concludes with a case study to highlight the differing areas of occupation that are impacted by stroke in younger survivors. Through the submission of *Stroke and the Younger Adult – Recommendations for Occupational Therapy*, it is hoped that awareness of this upcoming trend will increase and occupational therapists will be enabled to maintain a client-centered approach to therapy when working to meet the unique needs of the younger stroke survivor population.
CHAPTER I

INTRODUCTION

Occupational therapy (OT) is an integral component of the rehabilitation process for individuals who have sustained stroke. The role of OT throughout rehabilitation is to promote stroke survivors’ participation in meaningful activities, or occupations, in order to enhance functional independence and quality of life. OT continues to be essential in stroke rehabilitation as it is estimated that 550,000 individuals sustain a stroke each year (Bartels, 2011). By 2030, it is feared that an additional 4 million people will experience a new stroke; this will account for a 25% increase in its prevalence from 2010 (American Heart Association (AHA), 2011). According to the AHA, 4.8 million stroke survivors are alive in the United States today (2011), which is double the number of survivors 25 years ago (Bartels, 2011). Therefore, these statistics indicate the need for OT to continue providing skilled services to survivors throughout stroke rehabilitation.

Current researchers have found that there are rising rates of stroke among the young and middle-aged adult populations. This population will be called younger adults throughout this scholarly project, and is identified as individuals between the ages of 18 and 55 years. It has been found that within these ages, the incidence of stroke is currently increasing at a steady rate in comparison to previous decades (AHA, 2011). For this reason, it is evident that occupational therapists will be providing more services to younger stroke survivors and must be adequately educated in preparation to do so.
Stroke survivors at every age will experience limitations in all areas of occupation due to the physical, cognitive, emotional, and psychosocial impacts of stroke. However, younger stroke survivors experience the impact of stroke differently than older survivors do (Stone, 2005b; Wolf, Baum, & Connor, 2009). Younger adults are at different stages of life; therefore, they may have difficulties in areas of their lives that are unique from those of older adults. Therefore, the purposes of this scholarly project are to (a) increase occupational therapists’ awareness of the need to address areas of occupation or other rehabilitation aspects that are specific to younger stroke survivors, and (b) provide evidence-based recommendations for occupational therapists to maintain a client-centered approach when treating younger stroke survivors throughout the acute, inpatient, and outpatient phases of rehabilitation. In order to fulfill these purposes, we intend to publish an article which includes a case study with evidence-based recommendations that will highlight the differing impacts on areas of occupation, as well as guide occupational therapists in providing client-centered services to younger stroke survivors.

The Canadian Model of Occupational Performance and Engagement (CMOP-E) is the occupation-based model used to guide this scholarly project. The CMOP-E appreciates the interaction between the person, occupation, and environment, as well as enables individuals to engage in meaningful occupations (Townsend & Polatajko, 2007). A unique feature of the CMOP-E is that it recognizes the cognitive, affective, and physical performance components that make up an individual, with an emphasis as spirituality as the core of the person (Townsend & Polatajko, 2007). The environment presents opportunities for engagement in occupations. It is essential that an occupational therapist considers the influences of the environment on occupational performance by
recognizing the physical, cultural, social, and institutional factors that may impact therapy. Occupation is the link between the person and the environment and is categorized into three main areas: self-care, productivity, and leisure (Townsend & Polatajko, 2007). The desired outcome using the CMOP-E is a harmonious relationship between the person, environment, and occupation in order to achieve optimal performance and engagement (Townsend & Polatajko, 2007). The CMOP-E is evident throughout the development of this scholarly project as we considered how younger stroke survivors’ affective, physical, and cognitive limitations impact their abilities to perform occupations within their environments. The three areas of occupation emphasized within the CMOP-E correspond with the occupations specific to younger survivors, providing meaning, harmony, or a balanced relationship among factors, and a sense of spirituality.

This scholarly projected is divided into five chapters. The current chapter serves as an introduction to the topic of interest while emphasizing its relevance to OT and outlining the content of the following chapters. Chapter II is based on scientific readings and research; it consists of a literature review including statistics, risk factors, impact on areas of occupation, and the cognitive, physical, emotional, and psychosocial effects of stroke. The methodology, which is the specific process of how information was gathered and utilized in developing the product, is documented in Chapter III. In Chapter IV, the product is presented, which is an article that includes a case study and recommendations for occupational therapists. Chapter V is the concluding portion of this scholarly project; it summarizes the overall purpose and key information of the project, as well as includes recommendations for implementation and further action needed.
CHAPTER II
REVIEW OF THE LITERATURE

In 2008, it was estimated that 1 in every 18 deaths in the United States was the result of a cerebral vascular accident (CVA), commonly known as a stroke. According to the Heart Disease and Stroke Statistics 2012 Update published by the American Heart Association (AHA, 2011), approximately 795,000 people experience a new or recurrent stroke each year. The most current statistics indicate that, on average, someone in the United States experiences a stroke every 40 seconds (AHA, 2011). Therefore, stroke is considered the third leading cause of death in the United States. By 2030, it is feared that an additional 4 million people will experience a new stroke; this will account for a 25% increase in its prevalence from 2010 (AHA, 2011). There has been a steady decline in the mortality rate after stroke, however (CDC, 2011). According to the AHA, 4.8 million stroke survivors are alive in the United States today (2011).

Woodson (2008) describes stroke as “a variety of disorders characterized by the sudden onset of neurological deficits caused by vascular injury to the brain” (p. 1002). Vasculature damage within the brain reduces blood flow to the affected tissues and cells, resulting in damage or death of the brain tissue. The impact of a stroke is highly dependent on the location where the vascular damage occurred and can result in a wide range of physical, cognitive, and emotional impairments for the stroke survivor (Woodson, 2008).
Risk Factors for the General Population

There are a number of factors that increase the risk of an individual experiencing a stroke, including those that are modifiable and those that are not. The latter include age, gender, and genetic predispositions (National Institute of Neurological Disorders and Stroke (NINDS), 2004). Literature indicates that a stroke is commonly thought of as a disease of the elderly population (Gadidi, Katz-Leurer, Carmeli, & Bornstein, 2011; Knoflach et al., 2012; Stone, 2005b). This stems from the statistic that older people are at a substantially higher risk of having a stroke than the younger population; for every decade a person exceeds the age of 55 years, the risk of stroke doubles (NINDS, 2004). Therefore, nearly two-thirds of all strokes occur in persons over the age of 65 (NINDS, 2004). The most current research, however, is revealing that the number of younger people having strokes is significantly increasing due to number of factors such as gender, genetics, and lifestyle (AHA, 2011). These issues will be discussed in detail in the following paragraphs.

Gender is a risk factor of stroke that cannot be modified. Research indicates that men have a higher risk for stroke, however more women die from its occurrence (AHA, 2011; NINDS, 2004). This is thought to be due to the fact that women tend to live longer than men; therefore, women experience stroke at older ages. Although more men have strokes, women are less likely to recover because of an increased age at the onset of the CVA (NINDS, 2004). The last unmodifiable risk factor is genetics. For some families, stroke may occur due to inherited predisposition to other risk factors such as diabetes and hypertension (NINDS, 2004).
The most common modifiable risk factors of stroke include hypertension, cardiac conditions, diabetes mellitus, obesity, cigarette smoking, and a sedentary lifestyle (AHA, 2011). The NINDS (2004) recognizes hypertension as the most powerful factor that contributes to stroke; those with hypertension are at a four to six times higher risk of having a stroke than those who have stable blood pressure (NINDS, 2004). Heart diseases and hyperglycemia are also dominant risk factors for onset of stroke. Persons with cardiac conditions and elevated levels of cholesterol and other lipids have a significantly higher chance of suffering from a stroke (AHA, 2011). The NINDS suggests that tobacco use is the most powerful modifiable risk factor of stroke; regardless of other risk factors, a person who smokes has a doubled chance of experiencing a stroke than someone who does not use tobacco. Cigarette smoking is also the most common risk factor associated with stroke at a younger age (NINDS, 2004). Research suggests that although a person may quit smoking, his or her risk of having a stroke does not decrease for several years (NINDS, 2004).

In more recent years, the rising rates of obesity have been associated with a higher incidence of stroke (AHA, 2011). In 2008, 67.3% of American adults over the age of 20 were considered overweight or obese. Obesity is correlated with the increasing incidence of mortality among the United States population; in addition, obesity is highly associated with the onset of diseases such as diabetes, coronary heart disease, stroke, heart failure, cancers, and many others (AHA, 2011). The presence of diabetes, which may or not be a result of obesity, increases a person’s chance of having a stroke by three times (Eliasson, Lindahl, Lundberg, & Stegmayr, 2003; NINDS, 2004). In addition, the NINDS (2004) indicates that 40% of people with diabetes also have hypertension; therefore, this
increases their risk of having strokes even more. The last modifiable risk factor for stroke is related to a sedentary lifestyle. Literature suggests that the relationship between obesity and a lack of physical activity may heavily correlate with incidence of stroke in much of the adult population (AHA, 2011).

**Risk Factors for Younger and Middle-Aged Adults**

There is evidence to support the rising rates of stroke occurring among the young adult populations. For the purposes of this literature review, the young and middle adult populations are considered to be between the ages of 18 and 55 years. It is within these ages that the incidence of stroke is steadily increasing in comparison to previous decades due to a number of reasons (AHA, 2011).

**Obesity and Associated Conditions**

There is an abundance of literature available recognizing the correlation between obesity and cardiovascular complications, including stroke. According to Rheaume, Leblanc, and Poirier (2011), obesity is associated with the increased occurrence of stroke and highly contributes to other complications including hypertension and diabetes. Because the rates of obesity are rising at a significant pace, it can be estimated that by 2020, 40% of men and 43% of women in the United States will meet the qualifications for obesity (Gorman, n.d.). Other conditions – that may or may not result from obesity – that increase the risk of stroke in younger and middle-aged adults include diabetes, a detrimental diet, and the sedentary lifestyle of Americans (AHA, 2011; CDC, 2012a; Eliasson et al., 2003; NINDS, 2004).

Throughout past years, the prevalence of diabetes has increased dramatically in accordance with the increases in prevalence of obesity (AHA, 2011). According to
Eliasson et al. (2003), diabetes is responsible for a large number of cases of stroke. In 2008, it was estimated that nearly 45% of adults in the United States had been diagnosed with diabetes mellitus or prediabetes. Between the years of 1980 and 2010, this number increased from 5.5 million to 21.3 million. Of those diagnosed with diabetes, 55% were within the age range of 20 to 55 years (CDC, Department of Health and Human Services, 2012a). It is estimated that an additional 7,100,000 people have undiagnosed diabetes today. In their study, Putaala et al. (2011) determined that diabetes is a significant risk factor for stroke in younger and middle-aged adults and leads to a much poorer long-term prognosis when compared to a person with stroke without diabetes.

The sedentary lifestyle and hazardous diet of most Americans is also contributing to the rising rates of obesity. Both youth and adults are moving less and eating more than in previous decades (NINDS, 2004). In 2009, 30% of adolescent girls, 17% of adolescent boys, and 33% of adults reported no engagement in 60 minutes of moderate-to-vigorous physical activity in the previous 7 days. Further, the daily average number of calories consumed by American adults has risen dramatically since 1971. This is related to larger portion sizes and an increase in the consumption of high-carbohydrate foods, sugar-sweetened beverages and snacks, and easily accessible and inexpensive commercially processed products (AHA, 2011).

**Tobacco Use**

In 2010, the AHA estimated that 19.35% of Americans over the age of 18 years smoke cigarettes (2011). Approximately 53% of smokers in the United States were between the ages of 18 and 55 (CDC, Office on Smoking and Health, 2012b). The AHA reported an additional 20% of students in grades 9 through 12 reported cigarette use in
As previously mentioned, the NINDS considers tobacco use to be the most powerful risk factor of stroke, independent of all others, and is the greatest risk factor among the younger and middle-aged adult populations (2004). Because the risk of stroke does not immediately decrease upon quitting tobacco use, a significant number of young and middle-aged adults who previously smoked will continue to be at an elevated risk for stroke in their immediate futures (NINDS, 2004).

**Head and Neck Injuries**

Adolescents and young adults have the second highest incidence of brain injuries in the United States due to accidents or risky behaviors that result in falls, gunshot wounds, and motor vehicle accidents (Radomski, 2008). McDermid (2011) highlighted the importance of monitoring brain injured patients for the occurrence of stroke; in her study of 23,000 patients with and 69,000 patients without brain injuries, stroke occurred significantly more in patients with brain injuries over a 5-year follow-up period than in those without the injury. Because adolescents and young adults are among the population with the highest number of brain injuries, research suggests that this population may experience stroke at a younger age as well (NINDS, 2004).

**The Impact of Stroke**

**Predictors of Functional Outcome**

The location of the stroke determines the level and type of impairments that will likely be present for a stroke survivor. For example, a lesion in a vessel of the anterior portion of the brain would result in symptoms of hemispheric impairments, while a lesion in a posterior vessel would be presented with signs of dysfunction of the brainstem (Woodson, 2008). The degree and time course to recovery following a stroke is highly
dependent on the severity and location of the lesion, as well as the age of the individual at the onset of the stroke (Woodson, 2008).

An abundance of current literature supports better recovery and functional outcomes for the younger and middle-aged adult populations following stroke (Fonarow et al., 2010; Gadidi et al., 2011). According to Gadidi et al. (2011), the age of the individual at onset of the stroke is a significant predictor of long-term disability and activity limitation four years post-stroke. Fonarow et al. (2010) stated that the severity of the stroke increased with age, and performance in activities was lower in older adults. Other studies have found that the odds of achieving functional independence six months post-stroke are significantly lower among the older population (Dennis et al., 1993; Knoflach et al., 2012). It is suggested that positive outcomes are achieved in 80-90% of young and middle-aged stroke survivors, including greater ability to achieve functional independence (Knoflach et al., 2012; Tiamkao et al., 2011). Current literature has also compared the stroke-related mortality rates of persons above or below the age of 55 years. In their study, Knoflach et al. (2012) found that mortality on stroke units serving 6,804 patients under the age of 55 years, only 2% died from stroke-related injuries and 88.2% achieved good outcomes after 3 months of rehabilitation.

Results from previous studies suggest that intensive rehabilitation during the initial phases of recovery results in the greatest functional outcomes in comparison to rehabilitation several years after the onset of the stroke (Kwakel, Kollen, & Wagenaar, 1999). Kwakel et al. (1999) also concluded that a stroke survivor’s recovery of dexterity within the first year can indicate long-term functional outcomes. For example, if a stroke survivor exhibits only mild impairments in his ability to use his hand and fingers on his
affected side, it is more likely that he will be able to return to work and complete self-care tasks independently. Wagenaar and Meijer (1991) also found that the level of impairment in grip strength of the affected hand is indicative of functional recovery post-stroke.

The significant predictors of functional outcomes beyond age and severity of stroke include performance of intravenous thrombolysis, current smoking, diabetes, and stroke complications (Bhalla, Grieve, Rudd, & Wolfe; Knoflach et al., 2012). In addition, Tiamkao et al. (2011) found that mitral stenosis and alcohol intake were the main factors related to poor outcome of stroke. This research suggests that persons who sustain a stroke at a younger age, immediately participate in rehabilitation therapies, and follow a healthy lifestyle increase their chances of regaining a significant amount of functional abilities (Tiamkao et al., 2011).

**Areas of Occupation**

The American Occupational Therapy Association (AOTA) has developed a guideline for occupational therapy professionals to follow when assessing clients and developing intervention plans based on the unique needs of the client. This document is called the Occupational Therapy Practice Framework: Domain and Process, 2nd Edition (OTPF-2). According to AOTA, there are a variety of activities, or occupations, that an individual participates in daily. These activities are classified into eight areas of occupation, and include: “activities of daily living, instrumental activities of daily living, rest and sleep, education, work, play, leisure, and social participation” (AOTA, 2008a, p. 630). Stroke survivors at every age will experience limitations in all areas of occupation due to the physical, cognitive, emotional, and psychosocial impacts of stroke. There is a
difference, however, in the type and severity of the limitations depending on the age of the individual who sustains the stroke (Fonarow et al., 2010; Gadidi et al., 2011; Wolf, Baum, & Connor, 2009). This will be explained further in the following paragraphs.

*Older Adults Versus Young and Middle-Aged Adults.* Younger stroke survivors experience the impact of stroke differently than older adults do. Younger adults are at different stages of life; therefore, they may have difficulties in areas of their lives that are very different from those of older adults (Stone, 2005b; Wolf et al., 2009). For example, at the onset of a stroke, the patient may be in or anticipate joining the paid labor force. He or she may be responsible for caring for children, managing a home, or participating in a variety of social activities and hobbies (Stone, 2005b; Wolf et al., 2009).

Previous studies have found that physical independence, mobility, and occupation, including both work and leisure activities, are the areas that are most significantly impacted by stroke (Gadidi et al., 2011). These concepts hold different meaning to persons of an older age, however. Persons older than the age of 55 may not be required to perform physically demanding or highly mobile tasks each day, such as completing home management tasks, caring for children, or shopping for groceries. An older adult may no longer work. Therefore, those who are retired may not experience the impact of a stroke on their ability to maintain a job and perform its essential functions (Gadidi et al., 2011; Vestling, Tufvesson, & Iwarsson, 2003).

The Cognitive Rehabilitation Research Group (CRRG) at Washington University School of Medicine gathered prospective data from the neurology department of a local hospital for nearly ten years, where 7,740 stroke survivors were cared for. Of the participants, approximately 27% were younger than 55 years old. Analysis of the data
also indicated that nearly half of the participants experienced mild neurological impairments, resulting in a disrupted ability to perform daily tasks and interact with others in a social network. Lastly, the data indicated that 71% of the participants were discharged home, discharged with home healthcare only, or discharged with outpatient services only (Wolf et al., 2009). For those who sustain even a mild stroke, daily tasks become difficult. Considering the majority of younger stroke survivors sustain mild strokes, have better functional recovery than older adults, and are discharged to home, young and middle-aged adults experience impairments in nearly all aspects of their daily lives (Fonarow et al., 2010; Gadidi et al., 2011; Wolf et al., 2009).

Research indicates that older adults have most difficulties with self-care tasks, including toileting, bathing, and dressing, and leisure activities, such as gardening, craftwork, and attending community events, after experiencing stroke (Trombly & Ma, 2002). In contrast, Wolf et al., (2009) suggest that the needs of the younger stroke survivor include not only self-care and leisure activities, but also tasks associated with family issues, work, driving, marriage responsibilities, and community participation.

Activities of daily living. Activities of daily living (ADLs) are the tasks that people do on a routinely basis to care for themselves. According to the AOTA (2008), ADLs include: bathing/showering, bowel and ladder management, toilet hygiene, dressing, eating, feeding, functional mobility, personal device care, personally hygiene, grooming, sexual activity, and sleep and rest. Regardless of age, sustaining a stroke can significantly impact an individual’s ability to complete ADLs independently due to the resulting physical and cognitive impairments, especially fatigue, one-sided weakness, and difficulty with balance. Although it is more common for older adults to experience
difficulties with ADLs post-stroke (Gadidi et al., 2011), these activities are often affected to some degree with the younger and middle-aged populations as well (Knoflach et al., 2012). Even at four years post-stroke, young patients often experience difficulties with toileting, bathing, and dressing and require assistance for these tasks from either adaptive equipment or a caregiver (Gadidi et al., 2011; Pettersson, Appelros, & Ahlstrom, 2007).

Instrumental activities of daily living. The AOTA considers instrumental activities of daily living (IADLs) to be relatively routine tasks that are complex and involve interaction with the environment (AOTA, 2008). Examples of IADLs that a younger or middle-aged adult may engage in regularly include care of others, care of pets, child rearing, communication device use, community mobility, financial management, health and home maintenance and management, meal preparation and cleanup, shopping, and the following of safety procedures (AOTA, 2008). The majority of young and middle-aged adults are independent in completing IADLs tasks prior to the onset of a stroke. Depending on the severity of the stroke and the impairments the survivor experiences, it is possible that assistance is needed for the completion of IADL post-stroke (Gadidi et al., 2011). In a study by Gadidi et al. (2011), nearly 8 out of 10 stroke patients required assistance for preparing meals after sustaining stroke, 65% never attempted heavy housework again, and over 80% never participated in traveling activities within 4 years post-stroke.

Due to the physical and cognitive impairments that typically result from a stroke, the majority of stroke survivors experience restricted community involvement and the inability to drive (Barnsley, McCluskey, & Middelton, 2012; Karceski & Gold, 2011). For young adults, mobility restriction is devastating. It constrains them from completing
necessary tasks such as caring for children, shopping, and attending work or social events (Barnsley et al., 2012; Karceski & Gold, 2011). It is estimated that only about 40% of people return to driving following stroke due to the visual, cognitive, and motor impairments that make the complex skills needed for driving incredibly challenging (Barnsley et al., 2012). This cessation from driving often results in enhanced stress, depression, and a sense of loss of roles and efficacy (Barnsley et al., 2012; Karceski & Gold, 2011). Non-drivers are forced to use public transportation or ask friends and family for rides, both of which are unfamiliar and undesired in comparison to driving themselves (Barnsley et al., 2012).

There is limited research pertaining to the impact that a stroke has on a young adult in regard to financial and household management, child rearing, and personal health maintenance. During these young and middle adulthood stages of life, however, it is clear that the physical, cognitive, and psychosocial impairments that accompany a stroke have devastating effects on these areas of life (Stone, 2005b; Wolf et al., 2009). For example, a stroke survivor’s impaired cognition may limit his or her ability to balance a checkbook. Fatigue and impaired balance may result in difficulty with completing yard work or exercising regularly as a way to maintain health (Wolf et al., 2009). Hemiparesis would likely impair a mother’s ability to care for her children and manage meal preparation or clean-up tasks within the home (Stone, 2005b).

**Education and work.** For the younger stroke survivor, the impact of a stroke can result in significant restrictions in regard to educational and work activities, such as obtaining a college degree, going back to school for higher education, landing a dream job, or achieving promotions at work (Vestling et al., 2003). Young adults are in the
education system and workforce now more than ever (Johansson, Norrving, & Lindgren, 2000; Wolf et al., 2009). The physical, cognitive, and psychosocial impacts of a stroke will likely delay a young stroke survivor from returning to school or work and may ultimately prevent him or her from doing so. The personal and financial costs of stroke is high; according to the AHA (2011), the average cost of stroke over a lifetime is $140,048. Cessation from obtaining a job or working can significantly impact overall household income, resulting in added stress for the stroke survivor and, if applicable, other members of the household such as a spouse or children (Buschenfeld, Morris, & Lockwood, 2009).

From interviews with young stroke survivors, Roding, Lindstrom, Malm, and Ohman (2003) found that the inability to be financially productive was a problem that was most difficult to cope with for stroke survivors. In a study conducted by Teasell, McRae, and Flinestone (2000), only nine percent of participants who were employed full-time at the onset of the stroke were able to return to their full-time employee statuses after rehabilitation. Long-term outcome predictors suggest that the younger population has a higher likelihood of returning to gainful work activities; however, cognitive and mobility impairments are the main causes of prevention of working for most (Gadidi et al., 2011).

According to Vestling et al. (2003), the average return-to-work time after the onset of stroke was 11.9 months. Predictors of return-to-work times included cognitive abilities, mobility, and essential job functions (Vestling et al., 2003). Those who were dependent with mobility assistive devices, had cognitive impairments, or had limited grip function had the lowest probability of returning to work (Gadidi et al., 2011; Vestling et
In a study by Wolf et al. (2009), nearly half of the participants reported working slower, unable to do the job as well, or not being able to concentrate. For the participants who tried returning to work following their strokes, it was common to feel a lack of confidence due to decreases in their functional abilities (Stone, 2005b).

Results from previous studies indicate that not being employed contributes to major dissatisfaction and decreased quality of life among younger stroke survivors (Buschenfeld, et al., 2009; King, 1994; Vestling et al., 2003; Wolf et al., 2009). In a study by Stone (2005a), however, participants reported that they felt less stressed following their stroke as they cared less about work; there was a greater focus on prioritizing their lives according to what was important to them and developing a new sense of self that appreciated the meaningful aspects of everyday life.

Social participation and leisure. AOTA considers leisure to be related to activities that one engages in at his or her discretion that does not relate to work, self-care or sleep (2008a). For the younger and middle-aged adults, this often involves socialization (Stone, 2005b). The young stroke survivors in Stone’s (2005b) study reported that they were not comfortable in large gatherings or social events because they felt that others would make judgments or not understand their difficulties. Nearly half of participants in a study by Pettersson et al. (2007) felt stigmatized or discriminated against in social situations due to the impairments of their strokes. Beliefs such as these caused stroke survivors to frequently decline invitations to social events (Barnsley et al., 2012; Pettersson et al., 2007; Stone, 2005b). In a qualitative study about the impact of using assistive devices after stroke, participants reported that the device reminded them that they were disabled, and their participation in activities was limited, especially in regards
to socialization (Pettersson et al., 2007). Common places where stroke survivors no longer attended, but were identified as meaningful, included local pubs and clubs, shopping centers, and friends’ homes (Barnsley et al., 2012; Pettersson et al., 2007).

Gadidi et al. (2011) concluded that many stroke patients require assistance with leisure activities such as gardening, engaging in hobbies, or reading a book. Although it may seem that older adults engage in more leisure activities due to retirement, young adults desire to engage in leisure hobbies on a regular basis, including dining out at restaurants or pubs, going shopping, going dancing with friends, or engaging in traveling or camping excursions (Viscogliosi et al., 2010).

**Cognitive Impact**

Cognitive changes can include problems with judgment, problem-solving, and memory (American Stroke Association, 2012; Viscogliosi, Belleville, Desrosiers, Caron, & Ska, 2010). Cognitive impairment is commonly experienced following stroke and can predict hospitalization, levels of dependency, and post-stroke death (Oksala et al., 2009; Pasquini, Leys, Rousseaux, Pasquier, Henon, 2007). Additional cognitive difficulties include slower processing abilities, disorganization, inability to concentrate, and a decrease in the ability to complete tasks well (Wolf et al., 2009), as well as visual processing and language difficulties (Viscogliosi et al., 2010). Liman et al. (2011) found that long-term intact cognitive functioning directly correlated with age and stroke severity. It has been found that young and middle-aged adults sustain more mild strokes; therefore, the impact on cognition is typically less severe with this population in comparison with older adults (Fanarow et al., 2010; Gadidi et al., 2011; Wolf et al, 2009);
Patel, Coshall, Rudd, and Wolfe (2002) support this as they concluded that age is a significant predictor of long-term cognitive outcomes in stroke survivors.

Cognition has a direct impact on a person’s ability to perform daily tasks, and a stroke can result in a significant disruption in participation in these activities (Viscogliosi et al., 2010). The most simple of tasks require a certain level of sequencing and processing cognitive skills. Basic ADLs that young and middle-aged adults perform everyday, such as bathing, grooming, and using the toilet, involve a complex set of skills that an unimpaired person may not realize (Viscogliosi et al., 2010). Complex IADLs, such as driving and managing finances, are often more difficult for a person with cognitive difficulties to perform independently (Barnsley et al., 2012; Karceski & Gold, 2011; Viscogliosi et al., 2010). According to a participant’s report in her study, Stone (2005b) found that even minor cognitive difficulties can lead to misunderstandings and challenges when interacting with others. Therefore, stroke survivors often experience anxiety or decreased self-esteem when in social or work contexts, due to increased cognitive difficulties (Pettersson et al., 2007; Stone, 2005b; Vestling et al., 2003).

**Physical Impact**

In addition to the cognitive impairments that may result from stroke, there is also a major impact on one’s physical functioning. Common symptoms following the occurrence of a stroke include persistent fatigue, one-sided weakness or paralysis, vision impairments, balance problems, and speech difficulties (ASA, 2012; Borthwick, 2012; Canning, Ada, Adams, & O’Dwyer, 2004; Chestnut, 2011; Lerdal et al., 2011; O’Connor, Cassidy, & Delargy, 2005; Roding, Glader, Malm, Eriksson, & Lindstrom, 2009; Staub
Fatigue has been found to be amongst the most common symptoms for individuals after experiencing a stroke and has been complained of as being extremely difficult to cope with (Chestnut, 2011; Lerdal et al., 2011; Staub & Bogousslavsky, 2001). Fatigue is a significant factor to consider as it has been found to be a major problem for all stroke survivors regardless of age, marital status, and gender (Stokes et al., 2011). In addition, fatigue is not only difficult for individuals to cope with, but it impacts stroke rehabilitation as well. Exhaustion and decreased energy takes a toll on individuals’ physical and mental health, which may have an effect on the overall recovery stage (Chestnut, 2011). However, the physical fatigue has been found to be the most impacted after stroke (Lerdal et al., 2011; Stokes et al., 2011).

It is evident that fatigue is a major underlying symptom which can impact other physical effects of stroke; however, decreased strength, sensory loss, visual involvement, and impaired balance are also common symptoms of stroke. A prerequisite for functional activities is an adequate amount of strength and sensory function (Canning et al., 2004; Tyson et al., 2006). As weakness and sensory loss have been found to result in a decrease in balance, all three factors contribute to the decline in movement and coordination. Many individuals post-stroke have difficulty walking, planning movements, and going up and down stairs, limiting recovery of function (Roding et al., 2009). Safety becomes an issue as movement impairment may limit one’s ability to perform occupations in a safe manner. As individuals experience loss of strength,
sensation, vision, balance, and coordination, it puts them at a high level of risk for falls (Tyson et al., 2006).

Another major physical symptom resulting from stroke is the impairment of communication, which has an impact on the individual experiencing the deficits as well as on others interacting with the stroke survivor. O’Halloran, Worrall, and Hickson (2009) found that 88% of patients in an acute stroke unit experienced communication impairments at some level of severity, signifying the frequency of communication deficits in individuals post-stroke. The presentation of language deficits varies depending upon the specific area where the stroke occurred in the brain; however, common communication and speech disorders include aphasia, dysarthria, and apraxia (ASA, 2012; Borthwick, 2012). The effects of aphasia are limiting, as the individual may be unable to either process or express information, or may experience both expressive and receptive aphasia in which it is difficult for the individual to understand and convey information. When an individual experiences dysarthria, a motor speech disorder, it may be difficult for him or her to articulate words, also decreasing ability to communicate. Similarly, apraxia affects one’s ability to plan the movements required for speech, although the muscles are capable for tasks other than speaking. Research has described the life-changing effects of communication impairments as not only being frustrating and devastating for the individual in regards to his or her everyday functional activities, but also for family and friends associated with the individual (Borthwick, 2012).

**Emotional Impact**

There are also a number of emotional side effects that occur as a result of stroke, including depression (ASA, 2012; Buschenfeld et al., 2009; Naess, Nyland, Thomassen,
Aarseth, & Myhr, 2005; Rasquin, Van de Sande, Praamstra, & Heugten, 2009), decreased self-esteem, problems with communication, disruptive behaviors, and loss of self-concept and identity (ASA, 2012; Austin, Bakas, Chadwick, Lewis, & Okonkwo, 2002; Ellis-Hill & Horn, 2000; Keppel & Crowe, 2000; Pettersson et al., 2007). Stroke can lead to a loss of emotional control and frequent mood changes, as well as impair one’s ability to exhibit and/or understand facial expressions and tone of voice of others (ASA, 2012). Also, after the incidence of stroke, individuals often experience embarrassment and decreased confidence due to their dependency on assistive devices and/or others, as well as the visible symptoms such as hemiparesis or urinary incontinence (Pettersson et al., 2007). As stroke survivors experience the emotional effects of strokes, many feel that others do not care about those effects, but are more focused on helping the survivor regain lost skills and return to their previous life (Stone, 2005a). The emotional effects of stroke can be challenging to cope with, as many young adults think of stroke as being only related to those of older age. In Stone’s study, one participant commented, “I thought you had to be sort of 65 plus and they [strokes] were brought on by blood pressure problems” (2005a, p. 297).

Although stroke has many negative emotional effects, research has shown that many young survivors have been able to return to satisfying lives by, most importantly, evaluating their lives and deciding what truly were priorities. In a study by Gillen (2005), stroke survivors were able to identify five themes relating to the positive consequences of sustaining a stroke: a) increased social relationships, b) increased health awareness, c) changes in religious life, d) personal growth, and e) altruism. In attempts to return to exact previous lives, many individuals find that it was too difficult to do so
and, in turn, formed new outlooks to appreciate life (Stone, 2005a). Along with this changed mindset, individuals did not worry about things in life that were not extremely important to them, as they would find other aspects of life to be more essential. Stroke survivors spent time focusing on developing a new sense of self in order to live meaningful lives with the residual effects that they had from their strokes (Stone, 2005a).

**Psychosocial Impact**

Studies have shown the negative psychosocial impact that stroke leaves on an individual, which may be a result of, as well as contribute to, the cognitive, physical, and emotional deficits that result from stroke. It has been shown to be common for stroke survivors to feel the need to withdraw from others (Austin et al., 2001; Northcott & Hilari, 2011; Stone, 2005a). In specific, women have been found to socially isolate themselves more than men (Stone, 2005a). In a study by Northcott and Hilari (2011), 64% of the participants reported seeing their friends less and 30% felt they did not have any friends after their strokes. After experiencing stroke, many individuals have difficulty maintaining social relationships or friendships due to physical and cognitive impairments (Austin et al., 2002; Gadidi et al., 2011; Stone, 2005a). Several participants of Stone’s study tended to avoid situations where they knew they would have difficulties as a means to hide their residual symptoms and limitations (2005a). Other reasons as to why survivors lose friendships and social relationships include decreased common activities, low levels of energy, mobility impairments, environmental barriers, and poor communication (Northcott & Hilari, 2011).

The psychosocial effects appear to be indirectly correlated to the emotional effects; stroke survivors are at an increased risk for depression due to loss of friendships
and social participation that typically accompany work (Austin et al., 2002; Gadidi et al., 2011; Northcott & Hilari, 2011). As individuals are able to return to work, they experience significant higher levels of life satisfaction as a whole, as well as with their financial situations, leisure opportunities, and social lives. Stroke survivors who return to work also report better mental well-being in regard to mood, energy level, and self-esteem (Vestling et al., 2003).

Another aspect of the psychosocial impact of stroke relates to the sudden change in an individual’s particular roles after experiencing a stroke. According to the OTPF-2, roles are the characteristics and behaviors that are expected by society and typically change depending upon different contexts (AOTA, 2008a). Young and middle-aged adults who experience stroke must adapt to the unexpected changes in their typical roles and the occupations that those roles previously required (Roding et al., 2003). For example, housewives may have difficulty performing tasks they routinely completed prior to the onset of stroke; this may include cooking, cleaning, caring for children, and doing laundry. Roding et al. (2003) found that the inability to perform these particular tasks was considered to be the most frustrating for young and middle-aged female stroke survivors.

**Impact on Caregivers and Family**

In addition to the side effects that stroke may have on individuals, researchers have found that both families and caregivers experience emotional, physical, and social impacts of stroke as well (Austin et al., 2002; Buschenfeld et al., 2009). Emotionally, caregivers have reported feeling helpless, frustrated, and angry as a result of their loved one’s impairments from the stroke (Austin et al., 2002). Because of the consistent
demands of caregiving, there is a high prevalence of fatigue, anxiety, stress, depression, and sleeplessness among caregivers as well (Tooth, McKenna, Barnett, Prescott, & Murphy, 2005; Buschenfeld et al., 2009).

Researchers have found that caregivers experience significant burdens within the first year post-stroke and spend approximately 3.6 to 4.6 hours each day assisting with daily activities (Tooth et al., 2005). Many stroke survivors require assistance for various activities, some of which include the following: ADL such as toileting, bathing, and dressing (ASA, 2012; Austin et al., 2002); IADL such as home and financial management, transportation, and meal planning and preparation; taking care of children or other family members; and managing the stroke survivor’s behaviors (Austin et al., 2002). It is common for the caregiver to be viewed as the best assistive device that the stroke survivor has; without them, it is unlikely that the person with disabilities could live alone (Pettersson et al., 2007), which can affect the caregiver’s employment status. As family or friends have the pressure to be full-time caregivers as well as maintain jobs to provide the family’s income, they are put in a difficult situation and struggle with the decision (Buschenfeld et al., 2009). Researchers have found that as caregivers put a strong focus on caregiving tasks in order to help suppress emotions, their emotional health is inadvertently impacted as well (Buschenfeld et al., 2009).

Because of the high demands of care giving, caregivers often feel devalued due to isolation, which tends to lead to a loss of individuality and a sense of disappearing (Buschenfeld et al., 2009). Caregivers may feel helpless to alleviate the emotional distress when the stroke survivor realizes the extent of his or her own impairments. It can also be frustrating for caregivers to cope with the communication and physical limitations
of the stroke survivor, as well as with the changes of roles and personality. Oftentimes, additional stress is added for the caregiver as the stroke survivor undergoes a change in his or her personality due to stroke (Austin et al., 2002; Buschenfeld et al., 2009). Also, in addition to the stroke survivor experiencing loss of social relationships, researchers have found that social participation of family and caregivers decreased as well. Social support for caregivers is known to be extremely beneficial; however, caregivers have reported feeling a loss in both quantity and quality of friendships since their loved one’s stroke (Austin et al., 2002; Buschenfeld et al., 2009). As some caregivers experienced a negative effect on social life, some family members and caregivers found that their relationships had improved due to the amount of dependency on one another (Buschenfeld et al., 2009). It is evident that stroke has a significant impact on the lives of caregivers and family members, both positive and negative; therefore, it is crucial to include the caregiving team of each stroke survivor in the rehabilitation process (Lovat, Mayes, McConnell, & Clemson, 2010).

Summary

Statistics indicate that the prevalence of stroke in adults between the ages of 18 and 55 years is steadily increasing due to a variety of risk factors. The majority of strokes within this population are classified as mild; therefore, more individuals are surviving strokes, yet still are experiencing the physical, cognitive, emotional, and psychosocial effects as a result. These residual effects impact younger adults differently than older adults. The roles, responsibilities, and activities that individuals engage in typically correlate with the stages of life they are in; therefore, occupational therapists
must recognize the value of areas of occupation unique to younger adults, as well as approach treatment in a way that will meet the needs of the younger adult population.

Based upon recent literature findings, there is a lack of guidance for occupational therapists to address the unique needs of younger stroke survivors throughout the therapeutic rehabilitation process. The methodology used to develop an OT Practice magazine article, including recommendations for occupational therapists to use when providing services to younger stroke survivors and a relevant case study, will be addressed in the following chapter.
CHAPTER III
METHODOLOGY

An article, including recommendations for occupational therapy (OT) and a case study, was developed to increase occupational therapists’ awareness of the increasing trend of young and middle-aged, or younger, adults sustaining strokes. The recommendations were provided to guide occupational therapists during the intervention process throughout the acute, inpatient, and outpatient phases of stroke rehabilitation. In addition, the recommendations were intended for younger stroke survivors between the ages of 18 and 55 years. The occupational therapist is encouraged to consider the unique areas of occupation that are affected in the lives of younger adults after experiencing stroke, which are highlighted in the product.

A thorough review of the literature was conducted, summarizing the background information of stroke and the impact that stroke has on individuals. Specifically, national organizations, such as the American Stroke Association (ASA), American Heart Association (AHA), and Center for Disease Control and Prevention (CDC), provided the statistical information to support need for the product. This statistical information indicated the recent increasing number of strokes in the younger adult population due to a number of risk factors, including obesity and associated conditions, tobacco use, and head and neck injuries. The age range of 18 to 55 years was chosen to classify younger adults, as literature from numerous textbooks and journals from a variety of disciplines,
such as OT, neurology, psychology, rehabilitation, and nursing, indicated the unique impact on areas of occupation in adults within that specific age range. In addition, literature pertinent to this unique impact on younger stroke survivors was located and reviewed through scholarly databases, such as CINAHL, OT Search, and PubMed. Information from these resources was compiled into Chapter II to identify and emphasize the similarities and differences in the impact of stroke on younger stroke survivors’ cognitive, physical, emotional, and psychosocial well-being in comparison to older survivors. Further, the OT Practice Framework, 2nd Edition (OTPF-2) (American Occupational Therapy Association (AOTA), 2008a) and AOTA’s OT Practice Guidelines for Adults with Stroke (2008b) were used as a guide to categorize the areas of occupation that stroke affects in younger survivors, as well as family and caregivers. Although specific details of each area of occupation will be identified in the product, the general areas of occupation that were found to be unique to younger stroke survivors include: activities of daily living (ADL), instrumental activities of daily living (IADL), work, social participation, and leisure.

An occupation-based theoretical model was chosen and guided the structure and content of the product. The Canadian Model of Occupational Performance and Engagement (CMOP-E) was used throughout the creation of the product, as the model’s primary focus areas of person, environment, and occupation correlate with the unique experiences of younger stroke survivors (Townsend & Polatajko, 2007). To illustrate the impacts of stroke on a younger adult’s life, a case study was developed. Recommendations for occupational therapists when working with younger stroke survivors were included to emphasize the areas of occupation that may be uniquely
impacted in the lives of younger adults, such as the woman in the case study. It is essential that occupational therapists recognize the unique impact of stroke on the younger adult population and utilize the recommendations for evaluation and intervention in order to provide client-centered skilled services to younger stroke survivors.

The significant findings from the literature, the case study, and the recommendations for occupational therapists were compiled in order to create an article for submission to AOTA’s *OT Practice* magazine. In submitting an article for publication, it will provide readers with an example of how stroke can impact the younger adult population as it highlights the unique areas of occupation that are most commonly affected. Further, the article’s evidence-based recommendations will serve as a guide for occupational therapists to use throughout the intervention process with younger stroke survivors.

The reader is directed to Chapter IV for specific information of the product. The product consists of an *OT Practice* magazine article, which showcases the significant findings from the extensive review of the literature, recommendations for occupational therapists to consider during the intervention process throughout the acute, inpatient, and outpatient phases of stroke rehabilitation with younger adults, and a case study to illustrate the impacted areas of occupation and how OT may intervene throughout rehabilitation for younger adults.
CHAPTER IV

PRODUCT

In the previous chapters, the purpose and methods for the development of this scholarly project have been discussed. A description of the chosen theoretical foundation and a review of the current literature on the topic of stroke in the young and middle-aged (also referred to as “younger”) adult population were included. The current chapter presents the product of this scholarly project: *Stroke and the Younger Adult – Recommendations for Occupational Therapy*. This document was developed in accordance to the findings of the literature review. There is a lack of information relating to the role of the occupational therapist when working with the younger stroke survivor; therefore, the purpose of *Stroke in the Younger Adult – Recommendations for Occupational Therapy* is to provide evidence-based recommendations for occupational therapists to maintain a client-centered approach when treating younger stroke survivors in the acute, inpatient, and outpatient phases of rehabilitation.

The Canadian Model of Occupational Performance and Engagement (CMOP-E) (Townsend & Polatajko, 2007) guided the development of *Stroke and the Younger Adult – Recommendations for Occupational Therapy*. This model was chosen because it addresses the interaction between individuals and their environments during self-care, productivity, and leisure occupations. Further, a unique feature of the CMOP-E is that there is an emphasis on the ways in which spirituality impacts the person’s engagement in
occupation. Throughout the literature, it was evident that the addressed areas of occupation held meaning for young and middle-aged adults and were significantly affected by stroke.

*Stroke and the Younger Adult – Recommendations for Occupational Therapy* has been designed to aid the occupational therapist as he or she provides services to a younger stroke survivor throughout the rehabilitation phases. For each phase of rehabilitation, there are recommendations for the evaluation process, affected areas of occupation, and potential interventions. Further, the areas of occupation that are addressed in the CMOP-E (i.e., self-care, productivity, and leisure) are emphasized throughout each phase of rehabilitation. For example, younger stroke survivors often experience difficulties in their abilities to care for themselves and others, such as children or aging parents, after sustaining a stroke (Gadidi, Katz-Leurer, Carmeli, & Bornstein, 2011). In addition, grooming and hygiene are often valued and meaningful for the younger adult (Gadidi et al., 2011; Pettersson, Appelros, & Ahlstrom, 2007). Therefore, it is recommended that the area of self-care be addressed throughout the acute and inpatient phases of occupational therapy. Potential interventions for this area of occupation are included in the *Stroke and the Younger Adult – Recommendations for Occupational Therapy* (see Appendix).

Throughout the review of the literature, it was evident that productivity and work are areas of occupation that significantly impact a young or middle-aged stroke survivor’s quality of life. Roding, Lindstrom, Malm, and Ohman (2003) found that financial productivity is meaningful for stroke survivors and lack of work is often the most difficult problem to cope with. The inability to find or maintain a job can significantly
impact overall household income, resulting in added stress for the stroke survivor and, if applicable, other members of the household such as a spouse or children (Buschenfeld, Morris, & Lockwood, 2009). It is recommended that work-related skills and productive occupations are addressed throughout the inpatient and outpatient phases of rehabilitation in order to meet the unique needs of this population.

According to Viscogliosi et al. (2010) younger adults desire to engage in social activities and leisure hobbies on a regular basis, including dining out at restaurants or pubs, going shopping, going dancing with friends, or engaging in traveling or camping excursions. However, the physical, cognitive, and emotional impacts of stroke often reduce a stroke survivor’s desire to engage in these activities and he or she is more likely to decline invitation to social events (Stone, 2005b). This significantly impacts the meaning that a younger stroke survivor associates with relationships, leisure experiences, and social events (Barnsley et al., 2012; Pettersson et al., 2007; Stone, 2005b). In *Stroke and the Younger Adult – Recommendations for Occupational Therapy*, leisure occupations are addressed throughout the inpatient and outpatient phases of rehabilitation in order to enhance this central area of occupation.

The aforementioned examples are brief descriptions of how the content in *Stroke and the Younger Adult – Recommendations for Occupational Therapy* was developed through the review of the literature and with the guidance of the CMOP-E. By utilizing this product, occupational therapists are able to meet the unique needs of the young and middle-aged adult stroke survivor population.

The product is presented in its entirety in the following pages. The product, *Stroke and the Younger Adult – Recommendations for Occupational Therapy*, is an article
intended for submission to the OT Practice magazine is presented. The following pages include evidence-based recommendations that highlight the evaluation process, the areas of occupation affected by stroke, and the focus for intervention throughout the acute, inpatient, and outpatient phases of rehabilitation for the younger stroke survivor. A case study is also presented to illustrate the impacted areas of occupation and how OT may intervene throughout the phases of rehabilitation for the younger adult client.
ARTICLE FOR SUBMISSION:

STROKE AND THE YOUNGER ADULT –

RECOMMENDATIONS FOR OCCUPATIONAL THERAPY

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Stroke and the Younger Adult – Recommendations for Occupational Therapy

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Abstract

Occupational therapy (OT) is an integral component of the rehabilitation process for individuals who have sustained stroke. As the number of individuals sustaining and surviving stroke in the United States has consistently risen over the past decades (Bartels, 2011), it is anticipated that stroke prevalence from 2010 will have a 25% increase by the year 2030 (American Heart Association (AHA), 2011). In addition, a current trend in research has been found, indicating an increase in the incidence of stroke within the young and middle-aged, or younger, adult population between the ages of 18 and 55 years (AHA, 2011).

An extensive review of the literature was conducted with a focus on statistics, risk factors, and the impact of stroke to examine the unique effect of stroke on younger adults. Although stroke survivors at every age experience limitations in a variety of areas of occupation, the literature revealed that younger stroke survivors experience stroke differently than older survivors do (Stone, 2005; Wolf, Baum, & Connor, 2009). As research supports the rising rates of stroke in the younger adult population and the unique impact of stroke on younger survivors, it is evident that occupational therapists will be providing more services to younger stroke survivors and must be adequately prepared to do so.

This article includes a brief review of the literature with supporting evidence and recommendations that are unique to younger stroke survivors for occupational therapists.
to use as a guide throughout the acute, inpatient, and outpatient phases of rehabilitation. In addition, the article concludes with a case study to highlight the differing areas of occupation that are impacted by stroke in younger survivors. The purpose of this article is to increase awareness of this upcoming trend and enable occupational therapists to maintain a client-centered approach to therapy when working to meet the unique needs of the younger stroke survivor population.

**Introduction**

Cerebral vascular accident, commonly known as stroke, continues to be a major cause of disability, as it affects approximately 795,000 individuals each year in the United States (AHA, 2011). According to the AHA, 4.8 million stroke survivors are alive in the United States today (2011). The incidence of stroke can be attributed to a variety of risk factors, including age, tobacco use, genetic predispositions, and a sedentary lifestyle (National Institute of Neurological Disorders and Stroke (NINDS), 2004). Nearly two-thirds of all strokes occur in persons over the age of 65 years (NINDS, 2004), however the most current research is revealing that the number of younger individuals sustaining stroke is significantly increasing. Further, the mortality rate of stroke has been steadily decreasing in the recent decades (AHA, 2011). In other words, as more individuals are experiencing and surviving strokes, there will be a greater need for occupational therapy throughout the rehabilitation process.

**Risk Factors for the Young and Middle-Aged Adults**

Throughout recent research, it has been found that the rates of stroke among the young and middle-aged adult populations are increasing. This young and middle-aged, or younger, adult population includes stroke survivors between the ages of 18 and 55 years.
There are a number of factors that are contributing to the steadily increasing incidence of stroke among this population. Risk factors for the younger adults include obesity and associated conditions, tobacco use, and head and neck injuries.

There is an abundance of literature available that recognizes the correlation between obesity and stroke. Obesity is a significant contributor to complications such as hypertension and diabetes, both of which can lead to stroke (AHA, 2011; NINDS, 2004). Persons with hypertension are at a four to six times higher risk of stroke than those who have stable blood pressure (NINDS, 2004). Of those Americans who are diagnosed with diabetes, 55% are between the ages of 20 and 55 years (Center for Disease Prevention and Control (CDC), 2012a).

The CDC considers tobacco use to the most powerful modifiable risk factor of stroke, and approximately 53% of smokers in the United States are between the ages of 18 and 55 years (CDC, 2012b). Although there have been initiatives to reduce the number of people smoking the United States, the risk of stroke does not immediately decrease upon quitting tobacco use; younger adults who previously used tobacco will continue to be at an elevated risk for stroke in their immediate futures (NINDS, 2004).

Head and neck injuries are also significant risk factors of stroke for the younger populations. Adolescents and young adults have the second highest incidence of brain injuries in the United States (Radomski, 2008). In a study by McDermid (2011), stroke occurred significantly more in patients with brain injuries over a five-year follow-up period than in those without the injury; therefore, research suggests that the younger population may experience a stroke at a younger age as well (NINDS, 2004). Considering this rising rate of strokes in younger adults, it is evident that occupational
therapists will be providing more services to younger stroke survivors and must be adequately educated in preparation to do so.

**Stroke and Age: Differing Impacts**

Research supports greater functional outcomes and better recovery rates for younger stroke survivors in comparison to older populations. It is suggested that positive outcomes are achieved in 80-90% of younger stroke survivors, including a greater ability to achieve functional independence (Knoflach et al., 2012; Tiamkae et al., 2011). Further, the majority of younger stroke survivors sustain mild strokes, which often results in functional recovery and discharge to home. Therefore, occupational therapists are in a prime position to be an integral component of the rehabilitation process for stroke survivors as they work to achieve functional independence.

Although age serves as a significant predictor of functional outcomes following stroke, younger stroke survivors continue to experience impairments in nearly all aspects of their daily lives due to the physical, cognitive, emotional, and psychosocial impacts of stroke (Fonarow et al., 2010; Gadidi, Katz-Leurer, Carmeli, & Bornstein, 2011; Wolf, Baum, & Connor, 2009). However, several researchers suggest that younger stroke survivors experience the impact of stroke differently than older adults do.

Younger adults are at different stages of life; therefore, they may have difficulties in areas of their lives that are very different from those of older adults (Stone, 2005; Wolf et al., 2009). At the onset of stroke, an individual may be in or anticipating joining the paid labor force. He or she may be responsible for caring for children or managing a home, and may enjoy participating in a variety of social activities and hobbies (Stone, 2005; Wolf et al., 2009). Persons above the age of 55 years may not be required to
perform physically demanding or highly mobile tasks each day, such as completing home management tasks or caring for children; further, those who are retired may not experience the impact of stroke on their ability to maintain a job and perform its essential functions (Gadidi et al., 2011; Vestling, Tufvesson, & Iwarsson, 2003).

**Impact on Areas of Occupation**

Previous studies have found that many of an individual’s areas of occupation are impacted by stroke. Physical independence, mobility, and occupation, including both work and leisure activities, have been found to be the areas that are most significantly impacted (Gadidi et al., 2011). In addition, researchers suggest that the needs of the younger stroke survivor include not only self-care and leisure activities, but also tasks associated with family issues, work, driving, marriage responsibilities, as well as community and social participation (Wolf et al., 2009).

**Activities of Daily Living**

Regardless of age, sustaining a stroke can significantly impact an individual’s ability to complete activities of daily living (ADL) independently. Although it is more common for older adults to experience long-term difficulties with ADL post-stroke (Gadidi et al., 2011), these activities are affected to some degree with the younger populations as well (Knoflach et al., 2012). Even at four years post-stroke, young stroke survivors often experience difficulties with toileting, bathing, and dressing, and require assistance for these tasks; this dependency often results in feelings of embarrassment and a lower quality of life (Gadidi et al., 2011; Pettersson, Appelros, & Ahlstrom, 2007).
**Instrumental Activities of Daily Living**

The majority of younger adults are independent in completing instrumental activities of daily living (IADL) prior to the onset of stroke. In addition, these tasks are often very meaningful to the younger adult and contribute to the roles and responsibilities of everyday life. Examples of IADL that younger adults routinely perform include care of others, care of pets, child rearing, communication device use, community mobility, financial management, health and home maintenance and management, meal preparation and clean up, and shopping tasks (American Occupational Therapy Association (AOTA), 2008).

It is estimated that only about 40% of stroke survivors return to driving, due to the physical, cognitive, and visual impairments that accompany stroke. For many younger adults, mobility restriction is devastating, as it constrains them from completing necessary tasks independently, such as caring for children, shopping, and attending work or social events (Barnsley, McCluskey, & Middleton, 2012; Karceski & Gold, 2011). This cessation often results in enhanced stress, depression, and a sense of loss of roles and efficacy (Barnsley et al., 2012; Karceski & Gold, 2011).

**Education and Work**

For the younger stroke survivor, the impact of stroke can result in significant restrictions in regard to educational and work activities, such as obtaining a college degree, landing a dream job, or receiving an income to provide for a family. Results from research studies indicate that unemployment contributes to major dissatisfaction in younger stroke survivors (Bushenfield, Morris, & Lockwood, 2009; King, 1994; Vestling et al., 2003; Wolf et al., 2009), and the inability to be financially productive is the
problem that is most difficult to cope with following stroke (Roding, Lindstrom, Malm, & Ohman, 2003). The personal and financial costs of stroke are high, and cessation from obtaining or maintaining employment can significantly impact overall household income, resulting in added stress for the stroke survivor and relevant others (Bushenfield, et al., 2009).

Social Participation and Leisure

The physical, cognitive, and emotional impacts of stroke can significantly affect a stroke survivor’s social and leisure participation. Researchers have found that younger stroke survivors lack comfort in large gatherings or social events, are victims of stigmatization or discrimination, and frequently decline invitations to social events (Pettersson et al., 2007; Stone, 2005). Common locations where stroke survivors find meaningful but are hesitant to attend include shopping centers, friends’ homes, and pubs or restaurants (Barnsley et al., 2012; Pettersson et al., 2007). Although it may seem that retired adults engage in more leisure activities, younger adults desire to regularly enjoy leisure hobbies, such as dining at restaurants, shopping, traveling, reading, playing instruments, or engaging in other hobbies (Viscogliosi et al., 2012).

Emotional and Psychosocial Impacts of Stroke

The physical and cognitive impairments of stroke significantly lead to a variety of emotional and psychosocial effects that influence the younger stroke survivor’s satisfaction in occupational performance and quality of life. Physical impairments, such as fatigue, one-sided weakness or paralysis, and vision and speech deficits, often result in difficulties performing functional tasks, as well as impaired cognitive abilities, including judgment, problem-solving, and memory (American Stroke Association (ASA), 2012;
Viscogliosi et al., 2010). Cognition is considered the most powerful predictor of dependency (Oksala et al., 2009) and has a direct impact on a survivor’s ability to perform daily tasks. Even the most simple of tasks requires a certain level of cognition; a younger stroke survivor performs several complex tasks each day, including driving, working, and caring for a home and/or family. These physical and cognitive deficits often persist as barriers to occupational engagement and performing tasks such as ADL, IADL, and the essential functions of work.

Depression, decreased self-esteem, disruptive behaviors, and loss of self-concept and identity are common emotional effects that result from the physical and cognitive impairments of stroke (ASA, 2012; Buschenfield et al., 2012; Pettersson et al., 2007). Many younger stroke survivors experience embarrassment and depression due to increased dependency and loss of meaningful occupations and roles (Pettersson et al., 2007). This often results in withdrawal from friends and family and a reduced sense of self-efficacy, as the younger stroke survivor is required to adapt to the unexpected changes to typical roles of an employee or homemaker (Roding et al., 2003).

**Summary**

It is evident that stroke affects individuals’ abilities to engage in occupations across the lifespan; there are differences in the areas of occupation that are disrupted as a result of stroke, depending on the survivors’ stage of life and occupational roles. As occupational therapists will be working with stroke survivors at younger ages, it is crucial that therapists are aware of the need to address areas of occupation or other rehabilitation aspects that are unique to younger stroke survivors. Due to the unique impacts of stroke on younger adults, it is essential that occupational therapists maintain client-centeredness.
by considering the areas of occupation that younger adults commonly engage in and tailor treatment according to their distinct needs and wants. In order to maintain a client-centered approach when treating younger stroke survivors throughout the acute, inpatient, and outpatient phases of rehabilitation, refer to Table 1, where evidence-based recommendations for occupational therapy are available. A case study has also been developed to illustrate a client-centered approach to occupational therapy that considers the unique impacts on a younger stroke survivor’s areas of occupation (see Appendices A and B).
|**Table 1**<br>Occupational Therapy Recommendations for Younger Stroke Survivors |<br>**Acute**<br>**Areas of occupation:** ADLs (including care of family); Work<br>**Intervention:**<br>• Educate family on CVA and rehab; Contact workplace if desired; Basic ADLs; Education for adaptive equipment; Therapeutic use of self |<br>**Inpatient**<br>**Areas of Occupation:** ADLs; IADLs; Work; Social Participation; Leisure<br>**Intervention:**<br>• Focus on IADLs: cooking, cleaning, laundry, shopping, yard work, financial management<br>• Child-care options<br>• Work-related tasks<br>• Utilize technology (iPad™, iPhone™, Wii™, computer, etc.)<br>• Discuss home modifications in regard to safety and/or children<br>• Driving readiness<br>• Discuss options for sexual activity<br>• Use of adaptive equipment<br>• Family activities<br>• Cognitive-behavioral strategies with therapeutic use of self<br>• Self-esteem issues relating to relationships and socialization<br>**Potential Referrals**<br>• Vocational rehabilitation<br>• Driving rehabilitation<br>• Social services (finances, employment services)<br>• Psychological or family counseling services |<br>**Outpatient**<br>**Areas of Occupation:** IADLs; Work; Social Participation; Leisure<br>**Interventions:**<br>• Driving<br>• Work-related tasks<br>• Community integration: grocery store, bank, restaurants, etc.<br>• Lifestyle changes (tobacco use, physical activity, diet)<br>• Support groups<br>• Conduct home visit<br>• Cognitive-behavioral strategies with therapeutic use of self<br>• Fatigue management<br>• Educational websites and materials<br>**Potential Referrals**<br>• Support groups<br>• Therapeutic recreation, equipment, and services<br>• Psychological or family counseling services |
References


http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm


APPENDICES
Appendix A

Jane: A Case Study

You are working in the acute setting and evaluate Jane, a 31-year-old female who experienced a mild ischemic cerebral vascular accident in the upper division of the middle cerebral artery two days ago. Upon meeting Jane and her spouse, you learn that she is currently married to Scott, and together they have three children, ages seven, four, and two years of age. Scott owns his own construction business, requiring that he be present at the work sites in the early morning hours. Jane is employed as a third grade teacher at the local elementary school where her children attend. Jane is responsible for driving her children to and from school and daycare each day, as Scott is unavailable to do so because of his job hours. She is also primarily responsible for helping her children complete morning routines and transporting the older two children to after-school activities and sporting events. Jane and Scott share responsibility for helping children with schoolwork and completing home maintenance tasks. Prior to hospitalization, Jane was independent and active in all areas of occupation. Jane enjoys caring for her children daily, attending fitness classes three times each week, and plays piano and socializes with friends at her church every Sunday. In addition to working, Jane remains busy each day with a variety of household responsibilities, such as cooking, cleaning, and laundry. Jane’s fine and gross motor coordination, strength, range of motion, speech, cognition, and visual processing were evaluated with standardized assessments and observation during engagement in functional activities. Throughout the evaluation process, Jane presented with the following impairments:

Physical:
- Decreased strength and range of motion of the right side of the body (she is right hand dominant)
- Right-side facial droop
- Decreased dynamic sitting and standing balance
- Decreased stability during ambulation; is at risk for falls without support of quad cane and assist of one

Cognitive:
- Slowed processing skills
- Impaired short-term memory

Visual:
- Right-side visuospatial neglect
- Motor apraxia
- Mild contralateral hemianopsia

Speech:
- Mild dysarthria, resulting in comprehensible but slurred speech
- Mild expressive aphasia
Appendix B

Client-Centered Recommendations for Jane

**Acute Rehabilitation**
- Encourage Jane to engage in basic self-care tasks while attending to her right side to improve her strength, range of motion, balance, and to reduce neglect. Possible interventions include:
  - Don and doff clothing
  - Shower using adaptive equipment as needed
  - Toilet using adaptive equipment as needed
  - Complete grooming and hygiene tasks such as applying make-up and styling hair if desired
  - Practice safe techniques for transfers
- Allow Jane to have more time to process written, oral, and visual information.
- If appropriate, encourage Scott to contact Jane’s place of employment to discuss her work situation.
- Provide emotional support for Jane and her family by empathizing with them and instilling a positive thinking approach and hope for recovery.

**Inpatient Rehabilitation**
- Encourage Jane to attend to her right side to improve her strength, range of motion, balance, safety, and to reduce neglect and motor apraxia while engaging in occupations such as:
  - Child care activities
  - Laundry
  - Cleaning
  - Meal preparation and clean-up
- Facilitate engagement in activities to improve Jane’s fine motor, coordination, and dexterity. Possible interventions include:
  - Practice buttoning her own clothing, as well as assisting her children with dressing
  - Practice lacing and tying shoes for herself and her children
  - Play piano while following sheet music
  - Manipulate and fasten jewelry items
- Facilitate engagement in social activities to improve Jane’s dysarthria and expressive aphasia. Possible interventions include:
  - Read books aloud to children
  - Read students’ assignments
  - Practice writing letters to family members, students, or friends
  - Utilize social media and/or e-mail to connect with friends and family
• Allow Jane to use the inpatient grocery store to improve cognitive deficits such as short-term memory and slowed processing skills, as well as the physical deficits of neglect, motor apraxia, decreased strength and range of motion, and dynamic standing balance and ambulation.
  o Develop a grocery list
  o Use list to locate grocery items throughout store
  o Practice purchasing items

• Work toward grocery shopping in the community while addressing cognitive deficits, neglect, and motor apraxia.
  o Develop a list of groceries for her husband to purchase from store that includes ingredients for a favorite family meal.
  o Prepare the meal for Scott and the children in the OT kitchen.

• Address psychosocial and self-esteem needs by encouraging Jane to engage in meaningful leisure activities, such as:
  o Playing piano
  o Attending church
  o Inviting a friend for coffee or lunch

• Determine Jane’s motivation and ability to return to work as a third grade elementary teacher and, if necessary, discuss options for returning to work such as modifying her work space, schedule, and tasks.
  o If yes, engage Jane in work-related activities to prepare for return to work such as:
    ▪ Develop lesson plans to improve processing skills and short-term memory
    ▪ Practice energy conservation techniques to avoid fatigue
    ▪ Grade students’ assignments to improve expressive aphasia and handwriting skills
  o If no, assist Jane and Scott in locating resources for financial management, as well as help Jane identify alternative options for productivity

• Conduct a home visit to educate Jane and Scott on environmental modifications within the home, such as safety and the proper use of adaptive equipment for:
  o Meal preparation and clean-up
  o Grooming and hygiene
  o Childcare
  o Work

• Determine Jane’s readiness for driving, such as:
  o Sensorimotor, cognitive, and visual abilities
  o Jane and Scott’s fears and concerns
  o Needs for vehicle modifications
- Address emotional and psychosocial needs, including concerns related to:
  - Social participation
    - Provide resources for a support group for Jane other stroke survivors
  - Sexual activity
  - Caregiver responsibilities
  - Physical appearance
  - Cognitive abilities and speech difficulties in public situations

- Provide emotional support for Jane and her family by empathizing with them and instilling a positive thinking approach and hope for recovery.

- If applicable and indicated as a goal of Jane’s, refer to:
  - Vocational rehabilitation
  - Driving rehabilitation
  - Social services

### Outpatient Rehabilitation

- Continue with interventions to further improve Jane’s remaining deficits that impact her engagement in IADLs and work.

- Encourage participation in social activities such as:
  - Support groups for stroke survivors and their families
  - Classes at the healthcare facility
  - Family nights at the local community center
  - Activities with Scott and/or friends
    - Movies or shows
    - Children’s sporting events
    - Church meetings and/or benefits

- If not previously done, conduct a home visit to assess safety hazards and to identify needs for additional environmental modifications.

- Conduct an ergonomic assessment at Jane’s workplace to determine potential environmental modifications.

- Conduct a driving evaluation and educate Jane to return to driving independently.

- Facilitate community integration to enhance sense of productivity and self-esteem during social activities such as:
  - Grocery shopping
  - Completing financial errands at the bank
  - Dining at a restaurant
  - Attending church
• Convey the importance of necessary lifestyle changes to prevent recurrent stroke, enhance quality of life, and to encourage an overall healthy environment for Jane, Scott, and their children. Educate on the following risk factors:
  o Tobacco use
  o Poor diet
  o Sedentary lifestyle
  o Alcohol use
CHAPTER V

SUMMARY

Significant findings from the literature have indicated that the surviving rate of stroke is steadily increasing; therefore, stroke continues to be a major cause of disability (American Heart Association (AHA), 2011). In congruence with current research, the number of young and middle-aged, or younger, adults sustaining stroke is dramatically increasing as well. As the mortality rate of stroke is decreasing (AHA, 2011), there will be a greater need for occupational therapy (OT) throughout the rehabilitation process. Specifically, as more younger adults are currently sustaining and surviving stroke, it is essential that occupational therapists tailor treatment to younger adults’ specific wants and needs, as research has indicated a difference in the impact of stroke on younger adults when compared to older adults (Stone, 2005a; Wolf et al., 2009). Therefore, guided by the evidence from current literature, the Canadian Model of Occupational Performance and Engagement (CMOP-E) (Townsend & Polatajko, 2007), and American Occupational Therapy Association’s OT Practice Framework: Domain and Process, 2nd Edition (OTPF-2), the product of this scholarly project, an OT Practice magazine article, serves the purpose of increasing occupational therapists’ awareness of the rising rate of younger stroke survivors and the need for client-centered OT throughout the acute, inpatient, and outpatient phases of rehabilitation that considers the unique impact of stroke on the younger adult population.
This *OT Practice* magazine article is inclusive of the significant findings from the review of the literature regarding background information about stroke, current evidence supporting the increase in younger adults sustaining stroke, and the impact of stroke on a younger survivor. This article is focused on the younger adult population between the ages of 18 and 55 who have sustained a stroke. Considering the meaningful occupations of younger adults are impacted in a unique way, this article contains not only pertinent literature, but also evidence-based recommendations for occupational therapists to use as a guide throughout rehabilitation. In addition, this article provides readers with a case study of a younger female who survived a stroke and experienced common effects in areas of occupation that have been found in research. It is hoped that through the submission and publication into the *OT Practice* magazine, this article will promote occupational therapists and other readers to recognize that as stroke is steadily affecting more adults at younger ages, there will be a greater need for rehabilitative services to survivors. Further, the recommendations and case study serve as a reference for occupational therapists to utilize when providing skilled services to younger survivors throughout all phases of rehabilitation.

The efficacy of this article’s intent will be measured by its publication within the *OT Practice* magazine. It is the goal that by publishing in the American Occupational Therapy Association’s *OT Practice* magazine, occupational therapists and other readers may become more aware of the increase in younger stroke survivors and will have the opportunity to gain awareness and knowledge of the evidence-based content within the article. In addition, although indicated in some current research studies, therapists may not realize that younger stroke survivors experience stroke differently than older adults.
do. Therefore, the publication of this article will be essential to guide occupational therapists in providing client-centered treatment throughout acute, inpatient, and outpatient phases of rehabilitation that is effective and congruent with current literature. From reading the article, occupational therapists will be enabled to remain client-centered and current in research by becoming aware of this trend and utilize the evidence-based recommendations when providing skilled services unique to younger adults. Considering the publication of this article is evidently of significant importance, if the OT Practice magazine were not to accept this article, the contents of the article would be appropriately modified for resubmission or submission to a different publishing source in order to comply with the purpose of increasing awareness and providing recommendations for OT.

It must be acknowledged that the implementation of the recommendations with younger stroke survivors has not been officially researched. However, occupational therapists are highly knowledgeable in stroke rehabilitation and are experts in tailoring treatment according to the affected areas of occupation that are unique to each individual. Until the recommendations for intervention that are provided in this article have been thoroughly researched on younger stroke survivors, occupational therapists providing skilled services to younger stroke survivors are encouraged to use their academic and clinical knowledge when utilizing the recommendations to ensure effective and positive outcomes. In addition, although the literature revealed the ages between 18 and 55 years to be significantly impacted by stroke, the recommendations could be applied to an adult over the age of 55 years, depending on his or her goals and meaningful roles and occupations in life. Again, it is encouraged that those who read the article utilize clinical
reasoning to determine relevant application of the recommendations that are provided within the product in order to deliver client-centered services that meet the needs of the stroke survivor.
REFERENCES


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ACUTE REHABILITATION

The primary goals for occupational therapy in the acute phase of stroke rehabilitation include encouraging engagement in ADL and mobilization activities, as well as supporting the client and family during this experience.

-- Evaluation --

- Family Concerns
- Meaningful ADLs
- Physical Impairments
- Cognitive Impairments
- Psychosocial Impairments

-- Areas of Occupation --

- ADLs (including family care)
- Work

-- Intervention --

- Educate family on CVA and rehab
- Contact workplace if desired
- Basic ADLs: dressing, showering, toileting, grooming and hygiene
- Education for adaptive equipment
- Therapeutic use of self
INPATIENT REHABILITATION

The primary goals for occupational therapy in the inpatient phase of stroke rehabilitation include encouraging engagement in ADL and IADL activities, as well as begin addressing work and leisure participation.

-- Evaluation --

- Meaningful ADLs and IADLs
- Work-related Skills
- Driving Readiness
- Roles and tasks within the household
- Caregiver respite

-- Areas of Occupation --

- ADLs
- IADLs
- Social Participation
- Leisure

-- Intervention --

- Focus on IADLs: cooking, cleaning, laundry, shopping, yard work, financial management
- Child-care options
- Work-related tasks
- Utilize technology (iPad™, iPhone™, Wii™, computer, etc.)
- Cognitive-behavioral strategies with therapeutic
- Discuss home modifications in regard to safety and/or children
- Driving readiness
- Discuss options for sexual activity
- Use of adaptive equipment
- Family activities
- Self-esteem issues relating to relationships and socialization
- Potential referrals to: vocational rehabilitation; driving rehabilitation; psychological or family counseling services
OUTPATIENT REHABILITATION

The primary goals for occupational therapy in the outpatient phase of stroke rehabilitation include encouraging engagement in IADL and work activities for community integration, as well as continue encouraging leisure and social participation.

-- Evaluation --

- Driving
- Dexterity and Fine Motor
- Ergonomic Assessment
- Home Assessment
- Fatigue Management

-- Areas of Occupation --

- IADLs
- Work
- Social Participation
- Leisure

-- Intervention --

- Driving
- Work-related tasks
- Community integration: grocery store, bank, restaurants, etc.
- Lifestyle changes (tobacco use, physical activity, diet)
- Support groups
- Conduct home visit
- Cognitive-behavioral strategies with therapeutic use of self
- Fatigue management
- Educational websites and materials
- Leisure and recreational activities
- Potential referrals to: support groups, therapeutic recreation personnel, equipment, and services; psychological or family counseling services