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Occupational Therapy's Role in Post CVA Education

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Occupational Therapy's Role in Post CVA Education

by

Sadie Larson, MOTS and Brooke Westrich, MOTS

Advisor: Dr. Zimmerman, PhD, OTR/L

A Scholarly Project

Submitted to the Occupational Therapy Department of the

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in partial fulfillment of the requirements

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This scholarly project, submitted by Sadie Larson, MOTS and Brooke Westrich, MOTS in partial fulfillment of the requirement for the Degree of Master of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

Sonia Zimmerman
Faculty Advisor

4-17-19
Date

PERMISSION

Title: Occupational Therapy's Role in Post CVA Education

Department: Occupational Therapy

Degree: Master's of Occupational Therapy

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ABSTRACT

The average literacy rate for healthcare client education materials is currently 11th-16th grade (Dignan & Hunter, 2015). Due to cognitive impairments, difficulty understanding healthcare education materials increases after experiencing a stroke (Danzl et al., 2016). Poor health education results in lower adherence to treatment and limited participation in everyday activities at home (DeMarco, Nystrom, & Salvatore, 2011). Clients and caregivers specifically reported a lack of understanding of post-stroke impairments (O'Connell, Baker, & Prosser, 2003).

A literature review was conducted on topics related to health literacy, post-stroke residual deficits, client education, and occupational therapy's role in client education. There was an area of research literature under-explored regarding the high literacy level of education materials and the low literacy level of individuals post-stroke. Based on the results from the literature, the *Post-Stroke Client Education Guide* was developed to provide a tool for occupational therapists to use that incorporates the recommended grade level and methods for development of healthcare education materials. The Model of Human Occupation and Adult Learning Theory were used to guide the development of the education guide.

The purpose of this scholarly project was to develop an evidence-based educational tool for occupational therapists to share information regarding post-stroke residual deficits with clients and caregivers. Evidence-based strategies including grade level, multiple methods of delivery, and design were used throughout the product to increase client understandability. The educational guide will help facilitate client

recovery, as well as enhance client and caregiver ability to manage residual deficits at home while completing everyday occupations, routines, and roles.

CHAPTER I

Introduction

The average literacy rate for healthcare materials is currently 11th-16th grade (Dignan & Hunter, 2015). Few Americans have the literacy level needed to understand healthcare materials (Goodman, Finnegan, Mohadjer, Krenzke, & Hogan, 2013). Seldom is this more concerning than when individuals who have experienced a stroke are receiving educational materials. In the United States, more than 7 million people are affected by a stroke, which is the leading cause of long-term disability (American Heart Association, 2018). A stroke may impact an individual's cognition which leads to reduced retention of new material (Danzl et al., 2016). DeMarco, Nystrom, and Salvatore (2011) found that inadequate health education results in low adherence to treatment and limited participation in occupations at home. According to Hoffmann and Mckenna (2006), 89% of the reviewed educational materials were higher than the literacy level of over half of the clients who had experienced a stroke. Clients and caregivers reported the desire for more information relating to the individual's post-stroke specific deficits and needs (O'Connell, Baker, & Prosser, 2003). The occupational therapy practice framework delineates the education process as a type of occupational therapy intervention (American Occupational Therapy Association [AOTA], 2014). All occupational therapists are fit to educate clients and their families according to the Accreditation Council for Occupational Therapy Education [ACOTE] (2011).

The purpose of this scholarly project was to develop an evidence-based educational tool for occupational therapists to share information regarding post-stroke residual deficits with clients and caregivers. Evidence-based strategies including grade level, multiple methods of delivery, and design, were used throughout the guide to maintain an appropriate reading level. The educational guide is designed to facilitate client recovery and enhance client and caregiver ability to manage residual deficits at home while completing every day occupations, routines, and roles.

Guiding Models

The Model of Human Occupation (MOHO) was used in the development of the *Post-Stroke Client Education Guide*. MOHO was chosen because of the importance placed on the person. Client education is reliant on individual experience. MOHO addresses motivational aspects of a person, which is a focus of the *Post-Stroke Client Education Guide*, as well. According to Yamada, Taylor, and Kielhofner (2017), the concept of a person consists of three components: volition, habituation, and performance capacity. The components are incorporated throughout the guide; however, key terms were replaced in order to maintain recommended literacy level. For example, *roles and routines* are used in the guide in place of the term *habituation*. Specific education regarding residual deficits of stroke improves the client's motivation and self-management behaviors (Gustafsson et al., 2010). This motivational aspect aligns with a person's volition in MOHO. Individuals' personal causation is impacted when they experience themselves being able to contribute and produce outcomes. By incorporating the use of meaningful occupations and routines in the home, clients' will have a sense of effectiveness once again. Options are given so clients can create their own home plan

based on their interests which provides them with a sense of control; all of these aspects are part of the key term volition in MOHO (Yamada, Taylor, & Kielhofner, 2017).

Another key term of MOHO that is incorporated into the process of the guide is habituation. An individual's habituation is considered when collaborating to create a home plan. The goal is not to change a person's roles or routines, but incorporate management strategies into an individual's already set roles and routines. The management strategies will hopefully become a habit of routine, making the decision to engage in and carry out the strategies automatic. Common roles and routines were used to guide the creation of management strategies included in the guide. Therapists are encouraged to facilitate clients to further create personalized management strategies. Performance capacity is addressed in the guide by classifying residual deficits into lower and moderate functioning levels. The therapist will share only the level pertaining to the client during therapy sessions.

Additionally, the adult learning theory was used in the development of the guide. The format, including length, presentation, and design for the guide reflect the current evidence for adult learning for obtaining lower literacy rates in educational materials (Hersh, Salzman, & Snyderman, 2015). The assumptions from the theory are seen throughout the entirety of the guide. One assumption of adult learning theory is adults are more motivated from internal factors versus external factors (Merriam & Bierema, 2014). Individuals' lives are completely altered after experiencing a stroke, and many want to improve their situation. The educational guide will provide the client with strategies that may improve their quality of life and overall satisfaction with the therapy. Another assumption is adults prefer to learn on a need to know basis (Merriam & Bierema, 2014).

The educational guide covers a variety of post-stroke residual deficits, however the therapist will only cover the residual deficits that the client presents with. The next assumption is adults prefer problem-centered learning versus subject-centered (Merriam & Bierema, 2014). The portrayal of this assumption is when the client identifies that their residual deficits are causing problems in home life (Merriam & Bierema, 2014). Another assumption is adults have a many life experiences that are a good resource for learning. We used common life analogies throughout the educational guide to explain the residual deficits of a stroke.

By using the Adult Learning Theory and MOHO in development of the guide, an occupation-focused, client-centered, and evidence-based guide was created for occupational therapists' role in post-stroke education.

Key Terms and Concepts

- Cerebral Vascular Accident (CVA): A stroke is an interruption to the brain's blood supply from either a blood clot or burst in the blood vessel (World Health Organization, 2018). For the purposes of this scholarly project, the term stroke and CVA are used interchangeably.
- Health Literacy: Health literacy is how well an individual can obtain, process, and understand health information in order to make proper health decisions (U.S. Department of Health and Human Services, 2011).
- Residual Deficits: Residual deficits are the physical or cognitive impacts of a stroke. The five residual deficits focused on in this scholarly project are spasticity, flaccidity, shoulder subluxation, edema, and sensation loss. The term *effects of a stroke* will be used in place of *residual deficits* in the educational guide.

- Occupation-based Strategies: Occupation-based strategies are therapeutic treatment involving meaningful, everyday life activities including roles, habits, and routines. In the educational guide, *occupation-based strategies* are referred to as *home plans*.
- Occupations: Occupations are meaningful everyday life activities, including activities of daily living (ADLs), instrumental activities of daily living (IADLs), work, sleep and rest, play, leisure, social participation, and education (AOTA, 2014).
- Occupational Performance: Occupational performance is the accomplishment of the selected occupation resulting from the dynamic transaction among the client, the context and environment, and the activity or occupation (AOTA, 2014).
- Client: Client is defined as persons, groups, and populations (AOTA, 2014).

The chapters in this scholarly project include review of the literature, methodology, product, and summary. Chapter II will examine the literature regarding the topics of health literacy, post-stroke residual deficits, client education, and the role of occupational therapy. Chapter III will discuss the process used to develop the educational guide. Chapter IV includes the instructions and summary of the *Post-Stroke Client Education Guide*. The full educational guide is located in the Appendix. Chapter V will summarize the conclusions, limitations, and further recommendations.

CHAPTER II

Literature Review

Rehabilitation research demonstrates that individuals who experienced a cerebral vascular accident (CVA) and their caregivers often lack the information necessary to help manage the recovery process at home (Hinojosa & Rittman, 2007; O'Connell, Baker, & Prosser, 2003; Smith, Lawrence, Kerr, Langhorne, & Lees, 2004). Health professionals, including occupational therapists, are in a position to educate clients and their caregivers using a variety of teaching styles and educational materials that fit health literacy rates. Studies show a positive impact of education on client and caregiver understanding and retention of knowledge, and more effective management of stroke residual deficits at home (Behar-Horenstein et al., 2005; Chen, Xiao, & DeBelli, 2016; DeMarco, Nystrom, & Salvatore, 2011; Hoffmann & McKenna, 2006). For the purpose of this work, the term stroke will be used in place of CVA.

Stroke Overview

The World Health Organization (2018) stated a stroke is an interruption to the brain's blood supply from either a blood clot or burst in the blood vessel. According to the Center for Disease Control and Prevention [CDC] (2018), the lack of oxygen leads to death of brain cells; the damage to the brain impacts each individual differently depending on which area of the brain was involved. A stroke results in motor neuron dysfunction that causes hemiplegia or hemiparesis. Hemiplegia is paralysis on one side of the body, whereas hemiparesis is notable weakness of one side of the body. Usually the

side of the body opposite to the location of the stroke is affected by hemiplegia or hemiparesis. A stroke may impact more than just motor function, it may also cause changes in a person's sensation, cognition, perception, vision, personality, speech, and language (CDC, 2018). These impairments may lead to the reduced independence in activities of daily living (ADLs), difficulty with emotional functioning, social deficits, and increased risk for falls (Gillen, 2013).

Impact of Post-Stroke Residual Deficits

Stroke is a leading cause of serious long-term disability, affecting more than 7 million people in the United States (American Heart Association [AHA], 2018; American Occupational Therapy Association [AOTA], 2015). Stroke remains the third leading cause of death in the United States with approximately 795,000 people experiencing a new or recurrent stroke each year (AHA, 2018; Gillen, 2013). Of these individuals post-stroke, it is estimated that 74% return home after discharge from the hospital and 57% are cared for by family members (National Stroke Foundation, 2012). Many individuals post-stroke have changes in their physical, cognitive, and emotional abilities that hinder them from engaging in daily activities related to work, school, parenting, or leisure (AOTA, 2015; Gillen, 2013). Hartman-Maeir, Soroker, Ring, Avni, and Katz (2007) found that individuals who were one year post-stroke reported independence in basic ADLs such as eating and bladder control, however needed assistance in tasks such as bathing, dressing, and using the stairs. Individuals performance in basic ADLs is significantly associated with the severity of the stroke impairments, indicating that increased motor impairment leads to increased dependency during basic ADLs (Akbari, Ashayeri, Fahimi, Kamali, & Lyden, 2011; Mungas et al., 2002; Samuelsson, Söderfeldt, & Olsson, 1996). According

to Hartman-Maeir et al. (2007), approximately 57.2% of individuals give up activities they used to engage in before their stroke. Thirty nine percent of individuals post-stroke were satisfied with their “life as a whole”, 43% were satisfied with their ability in self-care, and only 34% reported they were satisfied with their leisure activities (Hartman-Maeir et al., 2007). The majority of individuals post-stroke often need practical help from family members due to long-lasting effects of the stroke (Berg, Palomaki, Lonnqvist, Lehtihalmes, & Kaste, 2005). About 50% of individuals are left with hemiparesis that affects their daily life at home and approximately 26% are dependent in activities of daily living (Pierce et al., 2010). It is estimated that between 29%-75% of people who had a stroke will experience upper extremity impairments including spasticity, flaccidity, shoulder subluxation, edema, and sensory motor dysfunction (Anderson-Preston, 2013; Giudice, 1990; Opheim, Danielsson, Murphy, Persson, & Sunnerhagen, 2014; Wang, Chan, & Tsai, 2000).

Residual deficits defined. Spasticity is defined as velocity dependent hyperactivity of tonic stretch reflexes (Woodsen, 2014). Individuals with spasticity have reduced sensorimotor function, increased pain, and limited range of motion, which can lead to functional limitations (Opheim et al., 2014; Woodsen, 2014). After a stroke, individuals with spasticity of the upper limb may have problems relating to passive and active function, associated reaction, and reduced sensorimotor function (Kong, Chua, & Lee, 2010; Opheim et al., 2014). Opheim et al. (2014) found the prevalence of spasticity in the upper limb one year post-stroke was 45% of the population with initially reduced upper extremity function.

Anderson-Preston (2013) defines flaccidity as the absence of tone and movement. Immediately following a stroke, there is an initial flaccid paralysis in approximately 90% of individuals, which is often replaced by a predictable pattern of spasticity in a timescale which may vary from 24 hours to 12–18 months (Anderson-Preston, 2013; Turner-Stokes & Jackson, 2002; Faghri et al., 1994). When the shoulder girdle becomes so weak from muscle flaccidity and the arm is no longer able to resist gravitational pull, the humeral head tends to be pulled inferiorly, resulting in shoulder subluxation (Arya, Pandian, Puri, & Vi. Puri, 2018; Turner-Stokes & Jackson, 2002).

Shoulder subluxation is poor alignment of the glenohumeral joint causing a palpable gap between the acromion process and humeral head (Arya et al., 2018; Harpreet, Singh, Jeyaraj, & Kaur, 2014). Poor alignment of the shoulder joint may result in fibrous changes and injury in the connective tissue of the surrounding ligaments and tendons (Paci, Nannetti, & Rinaldi, 2005). The soft tissue of the shoulder girdle becomes overstretched when subluxation occurs, which causes increased pain due to the high concentration of pain receptors in this area (Paci et al., 2007). Turner-Stokes and Jackson (2002) found prevalence for shoulder subluxation ranged from 17% to 81% in clients post-stroke. Shoulder subluxation presents many challenges to the rehabilitation process of the upper extremity by impeding normal shoulder function, prolonging hospital stay, and causing a variety of psychological effects due to increased disability (Kumar, Kassam, Denton, Taylor, & Chatterley, 2010). Subluxation was found to reduce function and quality of life for individuals post-stroke (Stolzenberg, Siu, & Cruz, 2012).

Edema is an accumulation of fluid in the intercellular tissue (Trayes, Studdiford, Pickle, & Tully, 2013). Post-stroke edema has been attributed to impaired functioning of

the lymphatic system and venous return as a result of a combination of immobility and dependency (Exton-Smith & Crockett, 1957; Faghri, 1997; Roper, Redford, & Tallis, 1999). Reported incidence rates of edema of the upper limb post-stroke have varied between studies and have ranged from 16% to 82.5% (Boomkamp-Koppen, Visser-Meily, Post, & Prevo, 2005; Exton-Smith & Crockett, 1957; Faghri, 1997; Tepperman, Greyson, Hilbert, Jimenez, & Williams, 1984). Occupational therapists may observe that the client has difficulty participating in occupational roles and activities of daily living as a result of edema, thus diminishing quality of life (Faghri, 1997; Gustafsson, Patterson, Marshall, Bennett, & Bower, 2016). Therefore, the management of edema is an important role of the health professional involved in stroke management (Gustafsson, Walter, Bower, Slaughter, & Hoyle, 2014)

According to Carey (1995), sensation loss is prevalent in 11%-60% of individuals post-stroke. A loss of sensation is related to a lesion in the somatosensory pathways in the body. Somatosensory impairment means that the individual may have difficulty identifying objects through touch, may be unaware they have an object in their hand, or may not know when he or she is being touched (Carey, 1995). Some daily activities that individuals reported difficult were communicating through a handshake, using utensils, dressing, and holding objects without crushing or dropping them (Carey, Matyas, & Baum, 2018). Decreased sensory awareness in the hemiparetic side can result in safety concerns, impaired grasp and manipulation skills in the affected hand, reduced ability to regain skilled movements necessary for ADLs, and impaired spontaneous use of the affected hand that can potentially lead to learned non-use (Schabrun & Hillier, 2009).

Table 2.1
Prevalence of Residual Deficits Among Clients Post-Stroke

Residual Deficit	Prevalence
Spasticity	45%
Flaccidity	90%
Subluxation	17-81%
Edema	16-82.5%
Sensation Loss	11-60%

Note. Data for spasticity prevalence from Opheim et al. (2014); for flaccidity prevalence from Anderson-Preston (2013), Turner-Stokes and Jackson (2002), and Faghri et al. (1994); for subluxation prevalence from Turner-Stokes and Jackson (2002); for edema prevalence from Boomkamp-Koppen et al. (2005), Exton-Smith and Crockett (1957), Faghri (1997), Tepperman et al. (1984); for sensation loss prevalence from Carey (1995).

Health Literacy

According to U.S. Department of Health and Human Services (2011), health literacy is how well an individual can obtain, process, and understand health information in order to make proper health decisions. Weiss (2003) found literacy is one of the best predictors of health status. Therefore, limited health literacy leads to poor health outcomes and can have an impact on levels of empowerment and participation which could potentially jeopardize safety and health (Levasseau & Carrier, 2012; Weiss, 2003). Goodman, Finnegan, Mohadjer, Krenzke, and Hogan (2013) found only 12% of American adults show the highest level of proficiency on a literacy scale, whereas 18% are on the lowest or below lowest level of proficiency.

Literacy levels of current educational materials. Most healthcare materials have a literacy level of 11th-16th grade (Dignan & Hunter, 2015; Hoffmann & McKenna, 2006). Many client education materials on the internet are written at high school or

college reading levels, making them inaccessible to the average American (Stossel, Segar, Gliatto, Fallar, & Karani, 2012). Akinleye et al. (2018) analyzed the online educational material for arthroscopically treated conditions and found that individuals would need much higher than a sixth grade reading level in order comprehend the information. Only 4% of the educational materials were at the recommended reading level of sixth grade, and almost a quarter of the materials were written above a twelfth grade reading level (Akinleye et al., 2018). Similarly, the online research completed related to educational articles on lymphedema found that on average the reading level was above twelfth grade (Seth, Vargas, Chuang, & Lee, 2016). Prabhu, Hansberry, Agarwal, Clump, and Heron (2016) researched the reading level of online oncology client educational materials and found a majority of these materials were written at or above a ninth grade reading level.

Barriers to client education. According to Bastable and Gramet (2011), there are a variety of barriers that impact the effectiveness of client education. One of these is the high work demand of health professionals that limits the time available for client education. Many health professionals reported that they do not feel competent with their teaching abilities. The healthcare environment is a difficult place to learn because of the lack of space, lack of privacy and frequent interference by other healthcare professionals (Bastable & Gramet, 2011). Hersh, Salzman, and Snyderman (2015) found that on average, during clinical appointments, clients only retain about 50% of what was said by the clinician or practitioner during that time period. Prabhu et al. (2016) found that clients are often encouraged by health care providers to have an active role in their own care; therefore, many clients participate in self-directed research. However, the barrier to this is

the high reading level of online education materials often cause more harm than good (Prabhu et al., 2016). According to Seth et al. (2016), the internet is a primary source that clients use to obtain health information. A majority of the easy to access health information online is too complicated for clients to fully understand (Seth et al., 2016). DeMarco et al. (2011) found health information on the internet can play an important role in improving the health care consumer-professional relationship and lead to improved health outcomes. Unfortunately, not all websites are created equal or accurate which can cause problems when clients try to find educational material on their own. Typical health care consumers lack the skills which health professionals employ when assessing quality health information websites (DeMarco et al., 2011).

Benefits of client education. According to Maniva et al. (2018), the use of educational materials are crucial to the client's care because education allows the client to be more involved in the care process. Client education helps to empower the client and contributes to increased facilitation in the development of personal skills (Maniva et al., 2018). There are many benefits that come from effective client education such as increased satisfaction, improved quality of life, reduced medical complications, increased adherence to treatment plans, increased independence, and empowerment of clients to actively contribute to their own care (Bastable & Gramet, 2011; Philipp et al., 1990). It is further asserted that information reduces levels of anxiety, improves outcomes, and improves relationships between health professionals, clients and their supporters (Dennis, 1990; Philipp et al., 1990).

Health Literacy of Clients Post-Stroke

According to Hoffmann and McKenna (2006), 89% of the reviewed written materials were higher than the reading ability of over half of the clients who had experienced a stroke. A poor match between the reading level of the written materials provided and clients' reading ability was found. For the clients in the study that had combined expressive and receptive aphasia, their reading level was equivalent to a fourth–sixth grade level compared to the seventh to eighth grade level of clients who did not experience aphasia as one of their residual deficits (Hoffmann & McKenna, 2006).

Along with aphasia, concentration and memory deficits resulting from the stroke itself lead to impaired retention of new material. According to Danzl et al. (2016), clients post-stroke reported recalling education to be extremely difficult. The information heard is not processed because the client is still adjusting physically and emotionally due to residual effects of the stroke (Meighan, 2018). Therefore, providing information to caregivers is important due to cognitive disorders, emotional problems, and behavioral changes experienced by the client in their care (Wachters-Kaufmann, Schuling, & Meyboom-de Jong, 2005). According to Seth et al. (2016), the contrast between readability of current materials and literacy ultimately limits caregivers and clients' ability to fully participate in the client's care, which can increase health disparities and negatively impact further health care access and outcomes. Addressing this discrepancy is of importance for improving overall health care delivery (Seth et al., 2016).

Lack of education for clients and caregivers. Many clients and caregivers want more information and discussion about the client's diagnosis and treatment (Wellwood, Dennis, & Warlow, 1994). In a study by Addington-Hall, Lay, Altmann, and McCarthy

(1995), over half the caregivers wanted to know more about stroke, one fifth had been given confusing information from health professionals, and nearly two fifths had been unable to get all the information they wanted despite them asking a health professional for more information. Even when clients and caregivers are provided information, they do not always understand the information they are given (Addington-Hall et al., 1995).

Clients and caregivers receive a minimum of information during the client's stay in hospital and are left with unanswered questions up to 2 or 3 years after the stroke (Wachters-Kaufmann et al., 2005). Danzl et al. (2016) found that clients and caregivers appreciated receiving education on post-stroke residual deficits. This study highlighted the importance of including general stroke information (such as what is stroke, residual deficits, and prognosis), facilitating recovery and functional mobility through therapy, neuroplasticity and reassurance of the possibility of recovery (Danzl et al., 2016).

Bakas et al. (2016) found that 26.8% of caregivers called healthcare providers to ask questions related to finding information about stroke, which included how to manage specific problems or complications of the person who experienced a stroke. Bakas et al. (2016) recommended health professionals should provide caregivers with information about stroke including post-stroke complications, lifestyle changes, and related care. Creasy, Lutz, Young, Ford, and Martz (2013) found that caregivers reported how important receiving information about stroke in a timely fashion was and its' applicability to the individual who experienced the stroke. Similarly, O'Connell et al. (2003) reported clients and caregivers want information presented relating to the individual's specific physical or emotional disabilities and needs.

Client dissatisfaction and satisfaction. Behar-Horenstein et al. (2005) found that 25% of the clients admitted into a hospital located in southeastern United States reported they were not satisfied with the information given. Wellwood et al. (1994) indicated that between 45% to 49% of individuals post-stroke and their caregivers were dissatisfied with the information they had received about stroke.

Aguirrezabal et al. (2013) and Smith, Forster, and Young (2009) found that providing training and information over time, as well as helping clients and caregivers to understand the client's diagnosis will lead to increased satisfaction. There was evidence in relation to improved client and caregiver knowledge and client satisfaction with the information received about the causes and nature of stroke (Smith et al., 2009). The use of both written and verbal information increased client and caregiver satisfaction and knowledge compared to just providing verbal information (Aguirrezabal et al., 2013; Best et al., 2018; Johnson, Sandford, & Tyndall, 2003). According to Meighan (2018), an active therapeutic relationship that provides both information and support is more likely to improve client satisfaction. A kind, compassionate and informative healthcare professional will override technology when considering client education effectiveness for individuals and families who are experiencing multiple stressors (Meighan, 2018). Creasy et al. (2013) found that caregivers wanted to be actively engaged with providers during inpatient rehabilitation. Having collaborative interactions resulted in enhanced caregiver preparedness and satisfaction (Creasy et al., 2013).

Client adherence and health literacy. Richards and Digger (2011) define adherence as commitment to follow the plan of care suggested by the healthcare provider. Inadequate health education prior to discharge negatively affects the adherence and

ability for self-care at home (DeMarco et al., 2011). According to Miller (2016), clients with higher levels of health literacy had adherence rates that were 14% higher than clients with lower health literacy. In order to improve client adherence, healthcare professionals need to make sure the clients clearly understand the health information related to their specific condition. The interventions that resulted in improving health literacy and treatment adherence included aspects of client education using handouts, audiovisual education, online resources, social supports, and effective communication between client and healthcare provider to address any concerns and questions (Miller, 2016). Rates of adherence tend to be higher in studies where health care professionals supplement their verbal instruction with written material, therefore health care professionals should strongly consider this approach (Picha & Howell, 2018).

Clients have been found to be adherent 50% (Picha & Howell, 2018) to 71% (Kolt & McEvoy, 2003) of the time with their home exercise instruction. Miller, Porter, DeBaun-Sprague, Van Puymbroeck, and Schmid (2017) found that 89% of participants who had experienced a stroke reported receiving a home exercise program (HEP) when discharged from rehabilitation. Of the participants who received a HEP, only 65% reported being adherent with at least part of the HEP. Bassett (2003) found poor adherence to a physical therapy HEP, with up to 65% of clients being either nonadherent or partially adherent to their HEP.

According to Martin, Williams, Haskard, and DiMatteo (2005), quality healthcare outcomes depend upon clients' adherence to recommended information and treatment regimens. Client nonadherence can be a major threat to health and wellbeing. Nonadherence is often due to a misunderstanding of treatment regimens. In some

conditions, more than 40% of clients sustain significant risks by forgetting, ignoring, or misunderstanding healthcare information. Although there is no one single intervention strategy to improve adherence of all clients, there are key factors that can help. These factors include assessment of clients' understanding of the information given, effective communication between health professionals and their clients, and a therapeutic relationship between the health professional and client. Knowing the client allows the health professional to understand elements such as beliefs, attitudes, subjective norms, cultural context, and social supports that are crucial to the client's adherence. Mutual collaboration between healthcare professional and the client fosters greater client satisfaction, reduces the risks of nonadherence, and improves clients' healthcare outcomes (Martin et al., 2005).

Stonerock and Blumenthal (2017) found that adherence was more challenging when the treatment plan was complex and required changing the client's current behaviors. Clients have a general idea of why these lifestyle behaviors are good, but they often do not fully understand why these behaviors are important and how they can successfully convert this information into actual behavioral changes. Guiding clients through the process of lifestyle changes is critical for success and adherence (Stonerock & Blumenthal, 2017).

Recommendations for Client Education Materials

The provision of written information is a way that the information needs of clients and caregivers following a stroke can be met (Eames, Hoffmann, Worrall, & Read, 2011). Written material should be at or below a fifth to sixth grade reading level (Hersh et al., 2015). According to Wiles, Pain, Buckland, and McLellan (1998), written

information in conjunction with information given orally has been identified as having several advantages. First, the provision of written information provides a back-up system in cases where clients are not provided with information or cannot recall information. Second, written information enables people to access the information they want at the time when they want it. Third, written information may be useful in clarifying verbal information and if presented clearly in accessible language may be open to less misinterpretation than verbal information alone. Written information is most successful when given to all clients and caregivers consistently, when it provides detailed information on the areas that clients and caregivers want information on, and when it is clearly presented in the lowest reading level possible (Hoffmann & McKenna, 2006; Wiles et al., 1998).

Nearly all participants in the study by Hoffmann and McKenna (2006) identified written information as their preferred format for receiving additional information. Wachters-Kaufmann et al. (2005) found that slightly more than half the clients and 63% of the caregivers wanted information materials handed out. Just as oral education should not be used solely, neither should written materials be given out in isolation (Hanger, Walker, Paterson, McBride, & Sainsbury, 1998; Maniva et al., 2018). Behar-Horenstein et al. (2005) recommended that hospitals broaden use of methods of delivery that include the use of auditory, visual, and kinesthetic modalities, or a combination of all of them.

According to Osborne (2013), written health educational materials should use a serif font style. The font should be at least size 12, preferably size 14 when the educational materials are being used by older adult populations. Educational materials should also have an adequate amount of white space. This means around a 50/50 mix of

printed and unprinted areas. Pictures should range in size to keep each page intriguing and provide enough contrast for individuals reading the material (Osborne, 2013).

According to Eltorai, Sharma, Wang, and Daniels (2015), improving clients' understanding and comprehension by modifying client educational materials can lead to improvement in health outcomes. Client education materials can be simplified by using a conversational style reflected in shorter sentences, simplified wording, and use pictures or videos (Eltorai et al., 2015; Liebner, 2015). According to Hersh et al. (2015), information should be prioritized, starting with the most important information first. The consideration of presentation, design and organization such as language, pictures, drawing and graphs were found to enhance readers' understanding of information (Hersh et al., 2015; Hoffmann & McKenna, 2006). Strategies that incorporate active participation of clients and caregivers including follow up for caregiver clarification and reinforcement have been found to be effective (Smith et al., 2009).

Health Literacy and Occupational Therapy

The occupational therapy practice framework (AOTA, 2014) delineates the education process as a type of occupational therapy intervention. The framework specifically defines the education process as an intervention process that involves “imparting knowledge and information about occupation, health, well-being and participation that enables the client to acquire helpful behaviors, habits, and routines” (AOTA, p. S30, 2014).

Occupational therapists from Accreditation Council for Occupational Therapy Education [ACOTE] accredited schools are fit to educate clients and their families (ACOTE, 2011). Standard B.5.18 requires students at all levels to “demonstrate an

understanding of health literacy and the ability to educate and train the client, caregiver, family and significant others, and communities to facilitate skills in areas of occupation as well as prevention, health maintenance, health promotion and safety”. Standard B.5.19 mandates that students “apply the principles of the teaching-learning process, using educational methods to design educational experiences to address the needs of the client, family, significant others, communities, colleagues, other health professionals, and the public” (ACOTE, 2011).

Research evidence. According to Liu, Pape, Ferrell, Turner, and Johanningsmeier (2013), client education is central to occupational therapy. Client education is used to teach skills, and empowers clients to take part in intervention planning in order to reach desirable health outcomes (Liu et al., 2013). According to Bailey (2017), occupational therapy practitioners should promote health behavior changes in clients through education and skills training throughout the sessions. Health behaviors are influenced by personal, environmental, and occupational factors that are associated with occupational therapy interventions. The ways in which an individual performs health behaviors is based on personal values and beliefs, the ability to plan and carry out healthy behaviors, habits and routines, and the context and environment in which the person lives (Bailey, 2017).

Health education programs conducted by occupational therapists have been effective with a variety of client diagnoses and conditions. Cheal and Clemson (2001) found that activity participation and confidence increased in older adults after completing a falls prevention program directed by occupational therapists. Eklund, Sonn, and Dahlin-Ivanoff (2004) compared a health education program for people with a vision impairment

with traditional intervention and found that participants had higher perceived security for several activities of daily living and instrumental activities of daily living. Vanage, Gilbertson, and Mathiowetz (2003) studied the impact of fatigue on occupational performance of adults with multiple sclerosis and found a reduction in impact after completing an educational course.

Client education is a component of therapy that is offered for the management of the stroke-affected upper limb by the occupational therapist (Gilmore, Spaulding, & Vandervoort, 2004). Support for clients who have had strokes and their caregivers may best be provided in the form of education to promote realistic understanding of the causes and consequences of stroke and the process, goals, and prognosis of rehabilitation (Duncan et al., 2005). According to Gustafsson, Hodge, Robinson, McKenna, and Bower (2010), management of a client's stroke-affected upper limb is a priority of occupational therapists working in stroke rehabilitation. Client and caregiver education is a valuable tool used by occupational therapists to facilitate client and caregiver ability to manage the residual deficits of a stroke. Information provision related to the stroke-affected upper limb should aim to improve client and caregiver knowledge and guide the development of effective self-management strategies. Specific education regarding residual deficits of stroke with multiple opportunities for practice and targeted feedback may be the factors that are crucial to facilitate learning, self-efficacy and self-management behaviors of the stroke-affected upper limb (Gustafsson et al., 2010).

According to Kessler, Egan, Dubouloz, McEwen, and Graham (2018), occupational therapists have the ability to guide stroke clients in order to reach occupational performance goals through individualized education and a problem solving

process. Occupational therapists are able to use client-centered care and an occupation-based approach to improve participation in valued activities post-stroke by incorporating individualized education, emotional support, and goal-focused problem solving (Kessler et al., 2018). Sahebalzamani, Aliloo, and Shakibi (2009) found that self-care education for individuals with hemiplegia improved activities of daily living performance. Ideally, every occupational therapy treatment session is an opportunity to teach the client or caregiver strategies and techniques to use at home (Woodsen, 2014). Rehabilitation research shows that occupational therapy education has proven to be effective with clients.

Summary

There is a poor match between stroke client educational materials and literacy levels of clients and caregivers receiving the materials (Hoffman & Mckenna, 2006). Between 29%-75% of people who had a stroke will experience a variety of upper extremity deficits including spasticity, flaccidity, shoulder subluxation, edema, and sensory motor dysfunction (Anderson-Preston, 2013; Giudice, 1990; Opheim et al., 2014; Wang et al., 2000). These deficits can lead to reduced independence in ADLs and difficulty with emotional functioning (Gillen, 2013).

Cognitive deficits resulting from the stroke often lead to reduced retention of new material (Danzl et al., 2016). Current healthcare materials also have a negative effect on information retention due to high literacy levels. Limited health literacy leads to poor health outcomes, decreased levels of empowerment and nonadherence (Levasseau & Carrier, 2012; Weiss, 2003). Nonadherence to treatment regimens is often due to a misunderstanding of instruction (Addington-Hall et al., 1995). Adherence and satisfaction

rates were found to be higher when verbal instruction was supplemented with written material (Aguirrezabal et al., 2013; Best et al., 2018; Johnson et al., 2003; Picha & Howell, 2018). Client education materials should incorporate conversational language using a fifth grade reading level and a simplified design (Eltorai et al., 2015; Hersh et al., 2015; Liebner, 2015). There are many benefits that come from effective client education such as increased satisfaction, improved quality of life, and increased independence (Bastable & Gramet, 2011; Philipp et al., 1990). Therapists should also use a variety of strategies that include the use of auditory, visual, and kinesthetic modalities to effectively educate clients and their caregivers (Behar-Horenstein et al., 2005).

Occupational therapists have the skills to educate clients and caregivers to manage residual deficits (ACOTE, 2011; Gilmore et al., 2004). The use of education promotes realistic understanding of the causes and consequences of stroke as well as rehabilitation process (Duncan et al., 2005). Occupational therapists are equipped to guide clients who have experienced a stroke through recovery by implementing individualized education to help achieve occupational performance goals (Kessler et al., 2018).

Problem Statement

The aim of this scholarly project is to develop an educational tool for occupational therapists to utilize when giving clients and caregivers information regarding post-stroke residual deficits. The product will reflect the use of evidenced based teaching methods and occupation-based strategies specific to the population addressed. The educational product will contain an appropriate literacy level that will be understandable to all clients and caregivers to increase satisfaction and retention of

information given by the occupational therapist. This educational tool will help facilitate clients' recovery, as well as enhance clients' and caregivers' ability to manage residual deficits at home.

Chapter III

Methodology

Following completion of 12 week experiential fieldworks in neurological rehabilitation settings and extensively reviewed research on the World Wide Web, multiple stroke education resources were located but the resources lacked the appropriate health literacy levels for the audience. Few interactive tools were found and even fewer emphasized the use of occupation. This scholarly project was developed to address the gap found in the literature regarding the high literacy level of education materials and the low literacy level of individuals post-stroke.

A literature review was conducted by searching online databases including PubMed, CINAHL, Google Scholar, and OT search. Books and government websites were also consulted to complete the literature review. The main topics included post-stroke residual deficits, health literacy, client education, and occupational therapy's role in client education.

The literature reviewed was assessed for the level of evidence to determine credibility. Findings from the literature were then organized into categories to further analyze the information. These categories ~~then~~ became the topics presented in Chapter II. The topics included stroke overview, impact of post-stroke residual deficits, health literacy, health literacy of clients post-stroke, recommendations for client education materials, and the role of occupational therapy.

Evidence-based education strategies were used to develop the *Post-Stroke Client Education Guide*. According to Hersh, Salzman, and Snyderman (2015), the recommended grade level for educational materials is fifth grade. The Flesch Kincaid Scale was used on each page of the education guide in order to maintain the recommended fifth grade reading level.

Behar-Horenstein et al. (2005) recommended the use of multiple methods of information delivery that include auditory, visual, and kinesthetic methods. The three methods, auditory, visual, and kinesthetic, were used throughout the guide. Auditory and visual methods were used on every page of the guide and kinesthetic methods were used throughout the guide to increase client understanding of certain strategies. The pictures used in the guide were taken by the occupational therapy students or retrieved from free image and stock photo websites such as Pixabay and Wikimedia commons.

According to Osborne (2013), written health educational materials should use a serif font style and use at least a font size of 12. The font style used in the education guide was Century and written in size 20. Size 20 was chosen because of its appropriateness when the guide is being used with a wide ranging age of clients and the location during use. The guide will be placed in the middle of the table, much farther away from the eyes than when just holding it in one's hands. The guide also includes the recommendations from Osborne (2013) such as adequate amount of white space and pictures as well as format varying from page to page in order to keep the reader engaged. Client education materials can be simplified by using a conversational style reflected in shorter sentences (Eltorai, Sharma, Wang, & Daniels, 2015; Liebner, 2015). The

educational guide uses conversational style by using *you* instead of general statements. All sentences were kept short and used simple wording.

It was decided the educational guide would be placed in a presentation binder that had the ability to fold into a standing table tent. This format would allow the therapist to sit on one side and the client on the other, each viewing their own side of the educational guide. The therapist side of the educational guide was envisioned to have detailed cues and descriptions of the topics being presented on, whereas the client's side would be more aesthetically pleasing with easy to read sentences.

PowerPoint was used to create slides for the assembly of the educational guide. Each slide served as a page in the guide. PowerPoint was chosen because of the creativity it allowed when developing the guide, as well as the ease of use. The content on the slides was information gained from the literature review. The therapist's side of the educational guide was created first, followed by the client's side. After completing the educational guide, home plan handouts were created using the same PowerPoint slides as the guide, which allowed the client to refer to the handout at home. Therapist guidelines were created to further inform the therapist about the educational guide.

After reviewing several models, the Model of Human Occupation (MOHO) was selected as the best model to guide the development of the educational guide. MOHO was chosen to address the main components of a person, particularly in their home environment (Yamada, Taylor, & Kielhofner, 2017). According to MOHO, the components of a person are volition, habituation, and performance capacity. Addressing these components of a person lead to a holistic, client-centered therapy process. The

therapist is able to educate the client and caregiver as well as facilitate the use of management strategies at home.

The adult learning theory was also selected to guide the development of the educational guide. The adult learning theory was chosen to address the needs of clients who have experienced a stroke to learn about residual deficits and management strategies to use at home. The assumptions from the theory helped in the formatting of the education guide including length and presentation of information. Further, the assumptions are seen throughout the entirety of the guide to contribute to adult learning and understanding.

Chapter IV

Product

The product created for this scholarly project is an interactive client education tool meant for therapists' use in an outpatient setting. The guide is designed to be used when a client has experienced a stroke and residual deficits are affecting home life. The guide targets clients who have low to moderate functioning level of the affected arm or hand. The guide was developed to better match the cognitive ability of individuals post-stroke by using a fifth grade reading level. Caregivers are encouraged to attend therapy sessions to also learn what the client is learning, to increase understanding and improve retention (Wachters-Kaufmann, Schuling, & Meyboom-de Jong, 2005). During a therapy session, the guide is intended to be located in the middle of a table with the therapist sitting on one side, and the client and caregiver sitting on the other. The guide facilitates adult learning by having pictures and words on one side for the client and caregiver to view, while the therapist is reading more detailed information aloud on the backside of the previous page. There are words in italics located on the therapist's side of the booklet which indicate a recommendation for an action, gesture, or further explanation of the topic at hand. The guide explains the physiological aspects of a stroke



Figure 1. Position of guide during use

including circulatory and neurological systems, as well as how these body systems relate to the occurrence of a stroke.

Five residual deficits are explained in the guide for clients and caregivers to enable a better understanding of the effects from a stroke. For easy access, the therapist may want to place colored tabs on specified sections. The tabs should be green, light blue, dark blue, orange, and purple to correspond to the five color-coded handouts. The green tabs should be located on page 37 and 69 for spasticity. The light blue tabs should be located on page 43 and 79 for flaccidity. The dark blue tabs should be located on page 49 and 87 for shoulder subluxation. The orange tabs should be located on page 53 and 95 for edema. The purple tabs should be located on page 57 and 101 for sensation loss. The first set of colored tabs are located on the edge of the guide to identify the residual deficits. The second set of tabs mark the correlating occupation-based strategies. The five handouts created are also color-coded to match the correlating residual deficits and occupation-based strategies. The therapist and client will collaborate to select occupation-based strategies the client will use at home within the next week.

The Model of Human Occupation (MOHO) was used in the development of the *Post-Stroke Client Education Guide*. According to Yamada, Taylor, and Kielhofner (2017), the concept of a person consists of three components: volition, habituation, and performance capacity. The components are incorporated throughout the guide; however, key terms were replaced in order to maintain recommended literacy level. For example, *roles and routines* are used in the guide in place of the term *habituation*.

Additionally, adult learning theory was used in the development of the guide. The format, including length, presentation, and design for the guide reflect the current

evidence for adult learning for obtaining lower literacy rates in educational materials (Hersh, Salzman, & Snyderman, 2015). The assumptions from the theory are seen throughout the entirety of the guide. The assumptions of the adult learning theory include adults are more motivated from internal factors, learn on a need to know basis, problem-centered learners, and have unique life experiences that enhance learner (Merriam & Bierema, 2014). The education of post-stroke residual deficits increases client understanding and improves quality of life. Clients will be presented with information that is applicable to their current functional status thus meeting the need to know and problem-centered learners. The guide uses everyday life experiences to relate to clients' lives and increase understandability. By using the Adult Learning Theory and MOHO in development of the guide, an occupation-focused, client-centered, and evidence-based guide was created for occupational therapists' role in post-stroke education.

The entire *Post-Stroke Client Education Guide* is located in the Appendix.

Chapter V

Conclusion

The purpose of this scholarly project was to develop an evidence-based educational tool for occupational therapists to share information regarding post-stroke residual deficits with clients and caregivers. Evidence-based strategies including grade level, multiple methods of delivery, and design, were used throughout the guide to maintain an appropriate reading level. The educational guide will help facilitate client recovery as well as enhance client and caregiver ability to manage residual deficits at home while completing everyday occupations, routines, and roles.

Based on the results of the literature review, the *Post-Stroke Client Education Guide* was created for occupational therapy use. The guide follows the fifth grade reading level recommendations and incorporates occupation-based management strategies for the client to do at home. The guide is meant to be used collaboratively between the occupational therapist, the client, and the caregiver in an outpatient setting.

The guide was developed using the two theories, the Model of Human Occupation and the Adult Learning Theory. These theories address the physical components and internal factors of a person as well as recommended educational techniques for best understanding of information. Components from each theory were used to increase the effectiveness of the education guide.

Limitations

First, the education guide has not as yet been used in a clinic setting. The effectiveness of the guide in an outpatient setting is yet to be determined. The second limitation is that the guide was developed to be used in an outpatient setting. According to the Adult Learning Theory, the client needs to be able to go home and immediately implement the strategies learned, which makes the guide not relevant for inpatient or acute settings. Throughout the session, it is recommended the therapist use clinical reasoning skills to determine which information to present to each client. There is no standardized way to use the information, which means the implementation will vary depending on the individual therapist. The final limitation is the guide was created specifically for clients who have experienced a stroke and is not generalizable to other client populations.

Recommendations

The first recommendation is to solicit therapists to use the guide in the clinic and provide feedback and recommendations for improvement based on their experience. Therapists would be asked to give feedback on both effectiveness and client satisfaction. It is expected that over time the guide may need updating to maintain evidence-based status. Finally, consideration can be given to using the format and principles that the education guide used to develop similar education guides for other neurological disorders such as Parkinson's disease or multiple sclerosis.

Conclusion

The *Post-Stroke Client Education Guide* was created to increase the availability of low literacy level education guides to improve client understanding on the condition

and residual deficits from a stroke. Improved understanding is expected to lead to improved client intervention adherence, outcomes, and client satisfaction. The guide also provides therapists with a mechanism to recommend occupation-based strategies for clients to use at home. The *Post-Stroke Client Education Guide* was designed to be evidence-based, client-centered, and interactive for occupational therapists to use when providing client education and management strategies to clients post-stroke and caregivers.

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Appendices

Appendix A

Post-Stroke Client Education Guide

Purpose of the Guide

The Post-Stroke Client Education Guide was developed to address the area of research literature under-explored between the low health literacy level of average Americans, and the high health literacy levels of current health educational materials. Many client educational materials, both printed and online, are written higher than the recommended literacy level of 5th grade (Akinleye et al., 2018; Dignan & Hunter, 2015). Along with the use of lower literacy levels, client educational materials should include the use of auditory, visual, and kinesthetic modalities or a combination of them all (Behar-Horenstein et al., 2005). Optimally, client education allows for the individual to be more confident and involved in their own care (Maniva et al., 2018). Many benefits come from effective client education including increased satisfaction, improved quality of life, increased adherence to treatment plans, increased independence, and empowerment of clients to actively contribute to their own care (Bastable & Gramet, 2011; Philipp et al., 1990). Effective client education is represented in the guide by using the recommended literacy level of 5th grade and a combination of auditory, visual and kinesthetic modalities.

Occupation-based Theory

The Model of Human Occupation (MOHO) was used in the development of the guide. According to Yamada, Taylor, and Kielhofner (2017), the concept of a person consists of three components: volition, habituation, and performance capacity. The components are incorporated throughout the guide. Specific education regarding residual deficits of stroke improves the client's volition and self-management behaviors (Gustafsson, Hodge, Robinson, McKenna, & Bower, 2010). Habituation is considered when assessing a client's current occupational deficits in roles and routines at home. The goal is not to change a person's routine, but incorporate management strategies into an individual's already set routine. Performance capacity is acknowledged when working with adult clients. Individuals present with residual deficits in therapy, but it is important to remember individuals bring life experiences. MOHO classifies life experiences as the

“lived body” (Yamada et al., 2017). Addressing these components of each client throughout therapy sessions will help to facilitate collaboration and therapeutic relationships.

Adult Learning Theory

The adult learning theory was also used in the development of the guide. The format, including length, presentation, and design for the guide reflect the current evidence for adult learning and lowering literacy rates in educational materials (Hersh, Salzman, & Snyderman, 2015). The adult learning theory assumptions include:

- As individuals mature, they become more self-directed.
- Adults have many experiences that are beneficial to the learning experiences.
- The adults’ readiness to learn is impacted by their social roles.
- Adults learn better when the learning material is problem-centered versus subject-centered.
- Internal motivators are more influential than external motivators.
- Adults need to know the purpose for learning something.

(Merriam & Bierema, 2014)

Each of the assumptions have been used in the development of the guide. Adults are motivated by wanting to improve situations in adult life (Merriam & Bierema, 2014). Individuals’ lives are completely altered after experiencing a stroke, and many want to improve their situation. The guide was developed to meet the need for clients who have experienced a stroke to learn about residual deficits and ways to manage deficits at home.

General Instructions

The guide is intended for clients who are post-stroke and have low to moderate functioning level of the affected arm or hand which is affecting their life at home. It is important for the therapist to develop a trusting relationship with the client to ensure honesty and openness in conversation. Caregivers are encouraged to attend therapy sessions to learn what the client is learning and to increase understanding and retention (Wachters-Kaufmann, Schuling, & Meyboom-de Jong, 2005). A safe environment that is

conducive for learning is also beneficial for the client and caregiver when being educated on residual deficits of the stroke.

During a therapy session, the guide is intended to be located in the middle of a table with the therapist sitting on one side, and the client and caregiver sitting on the other. The guide facilitates adult learning by having pictures and words on one side for the client and caregiver to look at, while the therapist is reading more detailed information aloud on the backside of the previous page. There are words in italics located on the therapist's side of the booklet which indicate there is a recommendation for an action, gesture, or further explanation of the topic at hand.

The guide explains the physiological aspects of a stroke including circulatory and neurological systems, as well as how these systems relate to the occurrence of a stroke. Later in the guide, there are 5 residual deficits, termed as effects of a stroke in the guide, that are explained for clients and caregivers to gain a better understanding. It is likely that all clients will not experience the same deficits; occupational therapists using the guide are encouraged to use clinical reasoning skills to determine what deficits to present to the clients and caregivers. Occupation-based strategies, termed as home plans in the guide, are located later in the guide and are presented based on which residual deficits the therapist presented to the client earlier.

For easy access, the therapist may want to place colored tabs on specified sections. The tabs should be green, light blue, dark blue, orange, and purple. The green tabs should be located on page 37 and 69 for spasticity. The light blue tabs should be located on page 43 and 79 for flaccidity. The dark blue tabs should be located on page 49 and 87 for shoulder subluxation. The orange tabs should be located on page 53 and 95 for edema. The purple tabs should be located on page 57 and 101 for sensation loss. The first set of colored tabs are located on the edge of the guide to identify the residual deficits. The second set of tabs mark the correlating occupation-based strategies. The 5 handouts created are also color-coded to match the correlating residual deficits and occupation-



Figure 1. Position of the guide in use

based strategies. Occupational therapists are recommended to review the residual deficit handouts following the educational sessions. The therapist and client should collaborate to select occupation-based strategies the client will use at home within the next week. The handouts have a location for the client to write down the strategies selected. The therapist should make sure to follow up with the client at the next therapy session. Clients and caregivers are more likely to manage residual deficits with occupation-based strategies when encouragement from the therapist is provided.

Occupational therapists are recommended to provide education to the client covering the background of a stroke and the impact on the client's body (pages 1-30) plus education on one residual deficit covered in the guide. Following the first session, education on one to two residual deficits is suggested per therapy session for increased client understanding. It is proposed the therapist uses clinical reasoning skills to determine whether to complete one or two sections based on each individual client. Individual's attention and intellectual levels vary; the therapist must watch for cues from the client about how much information to present in each therapy session (Osborne, 2013). Kessels (2003) found the quality of the information to be more effective than the quantity. The shorter the educational session, the more likely the client is to remember the information (Kessels, 2003). The therapist may decide to discontinue the educational session, when the client seems to be overwhelmed by information. The therapist will then continue the educational session at a later date.

References

Pictures used in the guide were taken from Pixabay and Fotor. All contents found on Pixabay are released under Creative Commons CCO, which makes them safe to use without asking for permission or giving credit to the artist - even for commercial purposes. Fotor offers free stock photos on the most popular public domain stock photo site. These websites allowed us to retrieve images and use them in the guide without giving credit to each photo. Photos that were used in the guide taken from Wikimedia Commons, the free media repository, were given credit. Under each photo retrieved from Wikimedia Commons, credit is given and notification is given to the reader whether the photo was adapted. Sources used for the written information in the Post-Stroke Client Education Guide are below:

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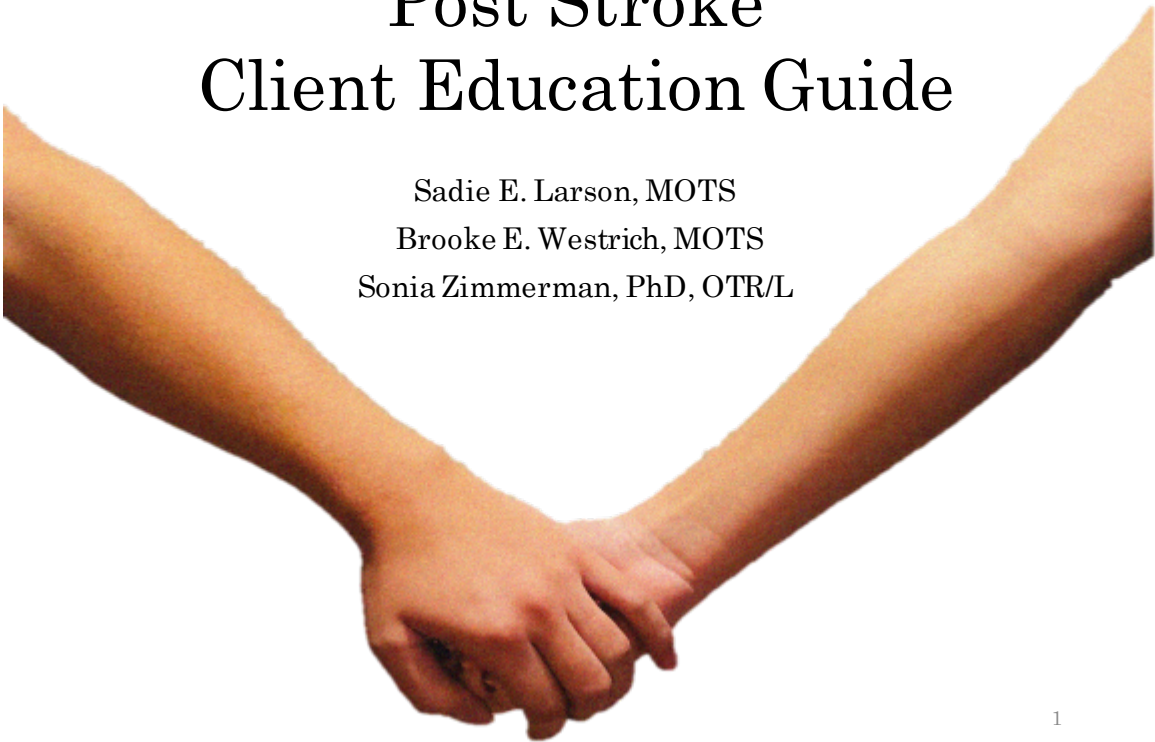
Appendix B

Post Stroke Client Education Guide

Sadie E. Larson, MOTS

Brooke E. Westrich, MOTS

Sonia Zimmerman, PhD, OTR/L



Introduction

Introduction

- The guide was created to inform you about your stroke. This will help you manage the effects of your stroke at home.
- Learning about your stroke and the effects can improve your quality of life and satisfaction.
- Education empowers you to be more involved in your own care. This will help you achieve the best possible recovery.
- If you have questions, ask at any time!

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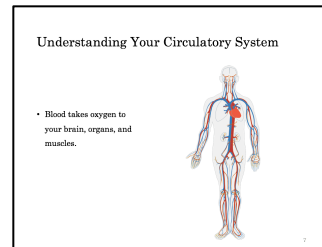
What is a Stroke?

What is a Stroke?

What is a Stroke?

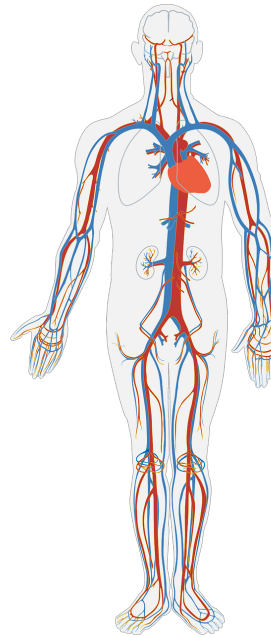
Understanding Your Circulatory System

- Blood takes oxygen to your brain, organs, and muscles.

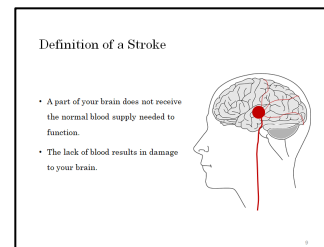


Understanding Your Circulatory System

- Blood takes oxygen to your brain, organs, and muscles.



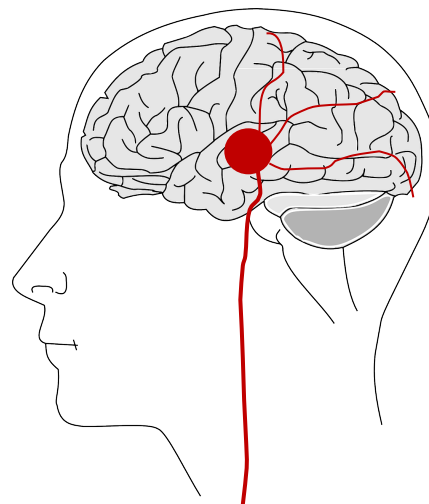
Definition of a Stroke



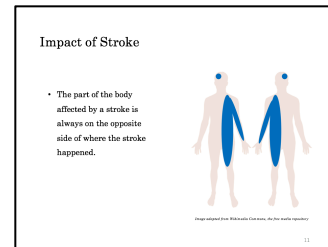
- A part of your brain does not receive the normal blood supply needed to function.
- The lack of blood results in damage to your brain.
- The longer the brain goes without oxygen from the blood, the more likely it is for brain tissue to be damaged.
- *Point to picture on front side.* The picture is showing how blood moves up through your neck and into your brain. The red dot shows where the stroke occurred, and you can see the part of the brain that is not receiving blood.

Definition of a Stroke

- A part of your brain does not receive the normal blood supply needed to function.
- The lack of blood results in damage to your brain.



Impact of a Stroke



- *Point to the body that is relevant to the client.* The blue dot on the body represents which side of the brain your stroke happened on. The shaded side shows which side of your body is affected. The part of the body affected by a stroke is always on the opposite side of where the stroke happened.

Impact of Stroke

- The part of the body affected by a stroke is always on the opposite side of where the stroke happened.

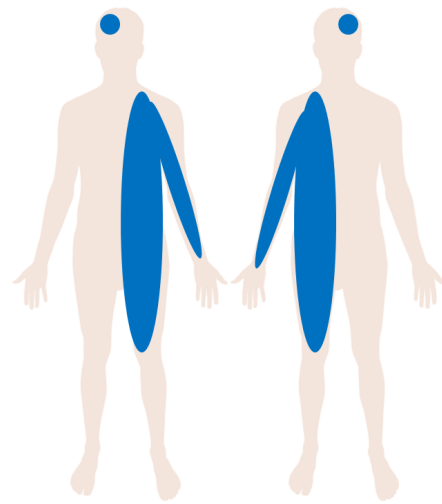
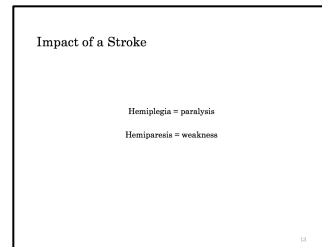


Image adapted from Wikimedia Commons, the free media repository

Impact of a Stroke



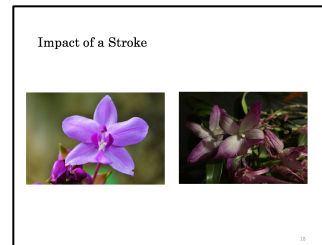
- The side of your body that is affected by your stroke may have hemiplegia or hemiparesis.
- Hemiplegia is paralysis on the affected side of your body.
- Hemiparesis is weakness on the affected side of your body.

Impact of a Stroke

Hemiplegia = paralysis

Hemiparesis = weakness

Impact of a Stroke

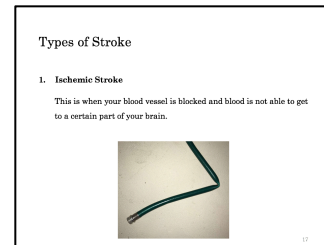


- The left picture is showing a blooming flower. This flower represents your brain before the stroke, receiving proper blood flow and care.
- The right picture is showing a wilting flower. This flower represents your brain after a stroke. Just like the flower did not receive the water needed to bloom, your brain did not receive the blood needed to function. With enough water and sunlight, the flower will begin to bloom again, just like your brain will begin to recover with a healthy lifestyle.

Impact of a Stroke



Types of Stroke



The first type of stroke is an ischemic stroke.

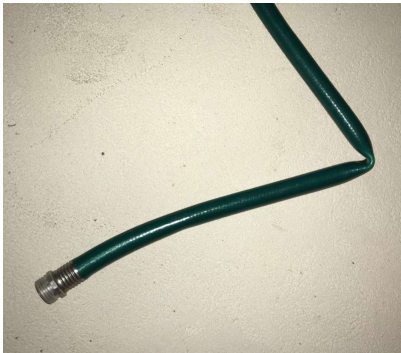
This is when your blood vessel is blocked and blood is not able to get to a certain part of your brain.

This hose may represent the blood vessel in your brain if you experienced an ischemic stroke. The flow of the water is blocked and it is unable to go where it is expected to. This is similar to how the flow of blood to your brain was disturbed.

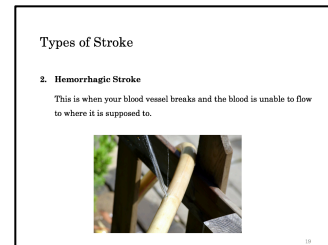
Types of Stroke

1. Ischemic Stroke

This is when your blood vessel is blocked and blood is not able to get to a certain part of your brain.



Types of Stroke



The second type of stroke is a hemorrhagic stroke.

This is when your blood vessel breaks and the blood is unable to flow to where it is supposed to.

This hose may represent the blood vessel in your brain if you experienced a hemorrhagic stroke. The water is going to a space that is unexpected due to the leak. This is similar to how the blood in your brain was leaking and was unable to flow to where it was supposed to.

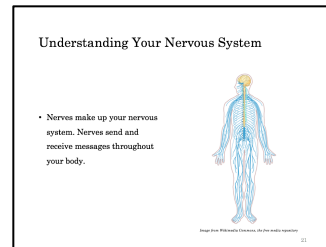
Types of Stroke

2. Hemorrhagic Stroke

This is when your blood vessel breaks and the blood is unable to flow to where it is supposed to.



Understanding Your Nervous System



- Nerves make up your nervous system. Nerves send and receive messages throughout your body.

Understanding Your Nervous System

- Nerves make up your nervous system. Nerves send and receive messages throughout your body.

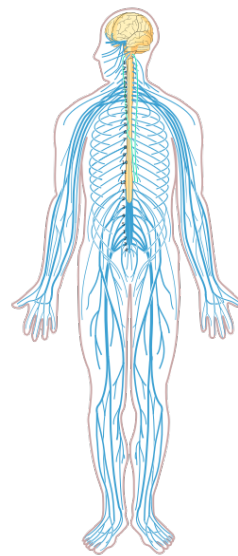


Image from Wikimedia Commons, the free media repository

Nervous System

Nervous System

- Your brain is the control center of your body. It sends messages through your nerves to different parts of the body.
- After a stroke, your brain may have problems sending messages to your affected side. Your nerves are no longer able to receive messages as they did before your stroke.


- Your brain is the control center of your body. It sends messages through your nerves to different parts of the body.
- After your stroke, your brain may have problems sending messages to your affected side. Your nerves are no longer able to receive messages as they did before your stroke.
- The nervous system is broken into two smaller systems called the motor system and sensory system.

Nervous System

- Your brain is the control center of your body. It sends messages through your nerves to different parts of the body.
- After a stroke, your brain may have problems sending messages to your affected side. Your nerves are no longer able to receive messages as they did before your stroke.

Parts of Your Nervous System

Parts of Your Nervous System



1. Motor system

- When a stroke changes the way your motor system works, you may have a hard time controlling your muscles.
- The motor system sends information from your brain to your muscles.

- The first part of your nervous system is the motor system.
- When a stroke changes the way your motor system works, you may have a hard time controlling your muscles.
- The motor system sends information from your brain to your muscles.

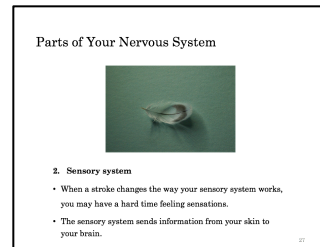
Parts of Your Nervous System



1. Motor system

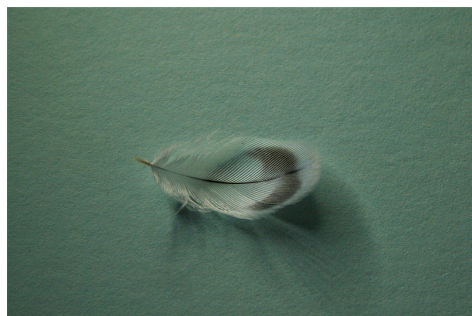
- When a stroke changes the way your motor system works, you may have a hard time controlling your muscles.
- The motor system sends information from your brain to your muscles.

Parts of Your Nervous System



- The second part of your nervous system is the sensory system.
- When a stroke changes the way your sensory system works, you may have a hard time feeling sensations.
- The sensory system sends information from your skin to your brain.

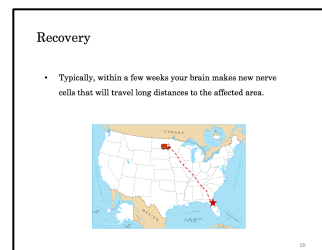
Parts of Your Nervous System



2. Sensory system

- When a stroke changes the way your sensory system works, you may have a hard time feeling sensations.
- The sensory system sends information from your skin to your brain.

Recovery



- Typically, within a few weeks your brain makes new nerve cells that will travel long distances to the affected area.
- Here they will begin to rebuild the connections in the nerves that were damaged.
- *Point to the picture.* Just like when you are on a road trip, recovery from your stroke will be a long journey too. If you stay positive and determined, the end result may come quicker.

Recovery

- Typically, within a few weeks your brain makes new nerve cells that will travel long distances to the affected area.




Image adapted from Wikimedia Commons, the free media repository

Recovery

Recovery

- There is no average time that it takes for you to recover from your stroke.
- The most rapid recovery period is typically 6 months post stroke.



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- There is no average time that it takes for you to recover from your stroke. Since everyone's stroke is different, recovery time is different.
- The most rapid recovery period is typically 6 months post stroke. Research has found that improvements may continue for much longer.
- Next, we will go over the effects your stroke had on your body.

Recovery

- There is no average time that it takes for you to recover from your stroke.
- The most rapid recovery period is typically 6 months post stroke.



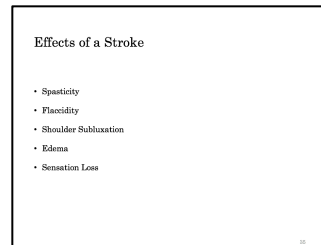
Effects of a Stroke

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Effects of a Stroke

Effects of a Stroke

Effects of a Stroke



State only to the client/caregiver which effects that you are going to cover based on the client's current effects from their stroke.

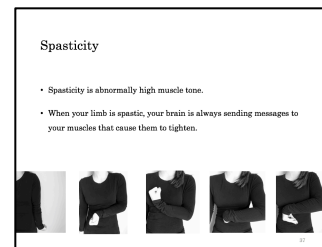
- Spasticity
- Flaccidity
- Shoulder Subluxation
- Edema
- Sensation Loss

Effects of a Stroke

- Spasticity
- Flaccidity
- Shoulder Subluxation
- Edema
- Sensation Loss

Spasticity

- Spasticity is abnormally high muscle tone.
- When your limb is spastic, your brain is always sending messages to your muscles that cause them to tighten.
- Due to your muscles always being tight, your affected arm may be in certain abnormal positions.

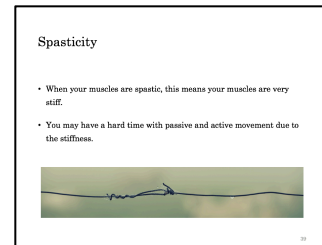


Spasticity

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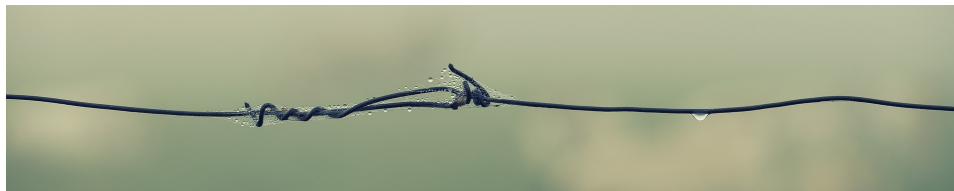
Spasticity



- When your muscles are spastic, this means your muscles are very stiff.
- You may have a hard time with passive and active movement due to the stiffness.
 - Passive: somebody else moving your limb for you
 - Active: you controlling your own limb
- The picture of the wire is representing your muscles when they are spastic. It can be very hard to move your muscles due to the stiffness just like it can be very hard to move and bend wire.

Spasticity

- When your muscles are spastic, this means your muscles are very stiff.
- You may have a hard time with passive and active movement due to the stiffness.



Spasticity

Spasticity

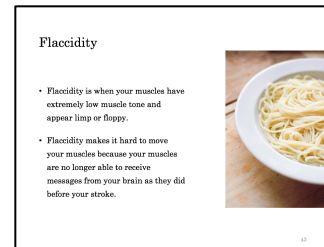
- Tight muscles can be very painful, especially when trying to move your arm.
- Amount of spasticity can range from day to day and even change during the day.

- Tight muscles can be very painful, especially when trying to move your arm.
- It is important to listen to what your body is telling you. A little pain is okay, but you want to try to move in ways that cause less pain known as the “pain-free range”. *Therapist should explain further depending on the severity of spasticity.*
- Amount of spasticity can range from day to day and even change during the day.
- Spasticity can be affected by many factors including touch, time of day, movement, and your own daily routine. For example: during dressing, spasticity may increase due to movement of arms and hands. *Therapist may give further examples that relate specifically to client's daily routine.*
- *Pause.* This is the end of this section, do you have any questions?

Spasticity

- Tight muscles can be very painful, especially when trying to move your arm.
- Amount of spasticity can range from day to day and even change during the day.

Flaccidity



- Flaccidity is when your muscles have extremely low tone and appear limp or floppy, similar to the noodles pictured.
- Flaccidity makes it hard to move your muscles because your muscles are no longer able to receive messages from your brain as they did before your stroke.

Flaccidity

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- Flaccidity makes it hard to move your muscles because your muscles are no longer able to receive messages from your brain as they did before your stroke.



Flaccidity

Flaccidity

- Flaccidity is due to your brain not being able to send messages to your muscles.
- The more effort, thought and time you put into trying to move your muscles, the more likely your nerves will rebuild.

- Flaccidity is due to your brain not effectively sending messages to your muscles.
- Throughout the recovery process, your brain is working to rebuild the nerves.
- The more effort, thought and time you put into trying to move your muscles, the more likely your nerves will rebuild.

Flaccidity

- Flaccidity is due to your brain not being able to send messages to your muscles.
- The more effort, thought and time you put into trying to move your muscles, the more likely your nerves will rebuild.

Flaccidity

Flaccidity

- Since your muscles are limp, your shoulder is not supported which can cause pain and/or shoulder subluxation.



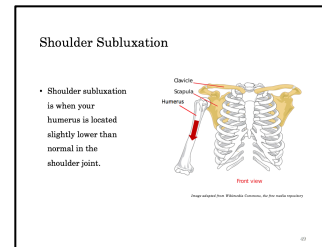
- Since your muscles are limp, your shoulder is not supported which can cause pain and/or shoulder subluxation.
- *Pause.* This is the end of this section, do you have any questions?

Flaccidity

- Since your muscles are limp, your shoulder is not supported which can cause pain and/or shoulder subluxation.



Shoulder Subluxation



- Shoulder subluxation is when the humerus is located slightly lower than normal in the shoulder joint. *Therapist point out the client's humerus.*
- This happens when the arm muscles are flaccid because the muscles do not support the weight of the arm.

Shoulder Subluxation

- Shoulder subluxation is when your humerus is located slightly lower than normal in the shoulder joint.

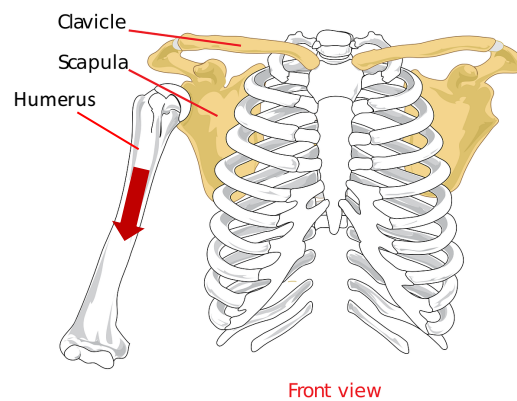


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Shoulder Subluxation

Shoulder Subluxation

- Over time, the humerus may be pulled slightly below the joint by
 - Gravity
 - Poor care of the affected arm
- When your shoulder is subluxed, movement may be hard or painful.

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- Over time, the humerus may be pulled slightly below the joint by
 - Gravity
 - Poor care of the affected arm
- Subluxation is similar to someone's shoulder "popping out of place"; however, subluxation is over time rather than sudden.
- When your shoulder is subluxed, movement may be hard or painful.
- *Pause.* This is the end of this section, do you have any questions?

Shoulder Subluxation

- Over time, the humerus may be pulled slightly below the joint by
 - Gravity
 - Poor care of the affected arm
- When your shoulder is subluxed, movement may be hard or painful.

Edema

Edema

- Edema is swelling caused by an increase in fluids trapped inside your body tissue.
- Swelling is most common in your affected arm and hand.
- Legs and feet may also have swelling.




Image: Chris Williams/Contrasto, AP Photo/Scott Spangler

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- Swelling is most common in your affected arm and hand.
- Legs and feet may also have swelling.



Image from Wikimedia Commons, the free media repository

Edema

Edema

- Your muscles are normally able to pump fluid through your body. Due to paralysis on one side, your muscles no longer have this ability.
- The result is pooling of fluid in the areas of your body that are not moving.

- Your muscles are normally able to pump fluid through your body, but due to paralysis on one side, your muscles no longer have this ability.
- The result is pooling of fluid in the areas of your body that are not moving.
- *Pause.* This is the end of this section, do you have any questions?

Edema

- Your muscles are normally able to pump fluid through your body. Due to paralysis on one side, your muscles no longer have this ability.
- The result is pooling of fluid in the areas of your body that are not moving.

Sensation Loss

Sensation Loss

- Your skin has a hard time sending signals to the brain due to damage in the sensory nervous system.
- You may not be able to feel touch and/or temperature.



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Sensation Loss

- Your skin has a hard time sending signals to the brain due to damage in the sensory nervous system.
- You may not be able to feel touch and/or temperature.



Sensation Loss

Sensation Loss

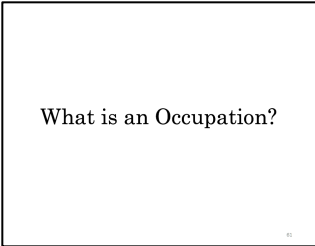
- Some signs of sensation loss are:
 - Not knowing you are being touched
 - Not able to identify or feel objects in your hand
 - Not knowing what kind of surface you are stepping on; this may affect the way you walk.

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- Some signs of sensation loss are:
 - Not knowing you are being touched
 - Not able to identify or feel objects in your hand
 - Not knowing what kind of surface you are stepping on; this may affect the way you walk
- *Pause.* This is the end of this section, do you have any questions?

Sensation Loss

- Some signs of sensation loss are:
 - Not knowing you are being touched
 - Not able to identify or feel objects in your hand
 - Not knowing what kind of surface you are stepping on; this may affect the way you walk



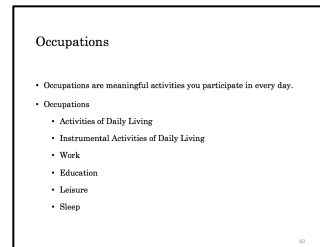
What is an Occupation?

What is an Occupation?

Before we go on and talk about a plan for you to do at home, I want to share a little bit about the term occupation with you.

What is an Occupation?

Occupations



- Occupations are meaningful tasks you participate in every day.
- Occupations
 - Activities of Daily Living – *therapist give examples*
 - Instrumental Activities of Daily Living – *therapist give examples*
 - Work
 - Education
 - Leisure
 - Sleep

Occupations

- Occupations are meaningful tasks you participate in every day.
- Occupations
 - Activities of Daily Living
 - Instrumental Activities of Daily Living
 - Work
 - Education
 - Leisure
 - Sleep

Why use occupations?



- Plans that use occupations improve participation in everyday tasks.
- You are more motivated to complete plans at home when they are important to you.
- By using your daily routines to create a home plan, you will be more likely to use the plan outside of therapy.

Why use occupations?

- Plans that use occupations improve participation in everyday tasks.
- You are more motivated to complete plans at home when they are important to you.





Home Plans

Home Plans

Therapist will use clinical reasoning skills to determine whether to cover lower function level plans or moderate function level plans with the client.


Now we will talk about plans you can use at home to manage the effects from your stroke.

Home Plans

Home Plans for Spasticity: Lower Functioning

Home Plans for Spasticity

- Weight bear on the affected side while standing or sitting for a period of time to complete tasks. Examples:
 - wiping down a table
 - reaching into a cupboard
 - brushing your teeth



- Weight bear on the affected side while standing or sitting for a period of time to complete tasks. This will help you become more aware of your affected arm and will help to manage the spasticity. Examples:
 - wiping down a table
 - reaching into a cupboard
 - brushing your teeth

Therapist will show and teach client how to weight bear on affected arm.

Home Plans for Spasticity

- Weight bear on the affected side while standing or sitting for a period of time to complete tasks. Examples:
 - wiping down a table
 - reaching into a cupboard
 - brushing your teeth



Home Plans for Spasticity: Lower Functioning

- Use both hands when completing tasks. Examples:
 - drinking from a cup
 - eating
 - cooking
 - washing your face

Therapist will show and teach client how to use both hands during different tasks.

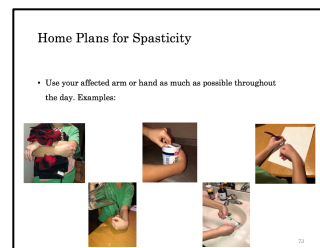


Home Plans for Spasticity

- Use both hands when completing tasks. Examples:



Home Plans for Spasticity: Lower Functioning



- Use your affected arm or hand as much as possible throughout the day.

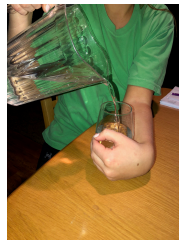
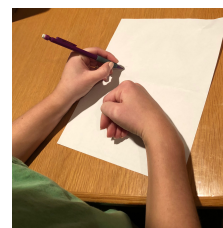
Examples:

- stabilize a sheet a paper while writing
- hold containers you need to open
- hold glass while pouring water
- hold toothbrush while applying toothpaste
- carry items such as clothes or magazines against your chest
- hold a bag while taking out items such as a wallet or groceries

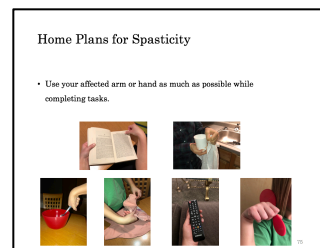
Therapist will demonstrate actions to client as necessary.

Home Plans for Spasticity

- Use your affected arm or hand as much as possible throughout the day. Examples:



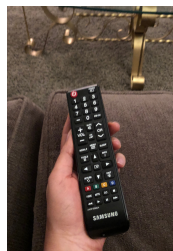
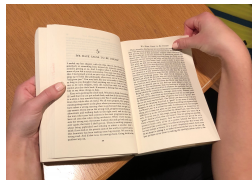
Home Plans for Spasticity: Moderate Functioning



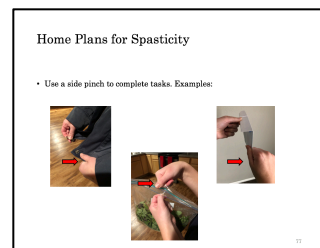
- Use your affected arm or hand as much as possible while completing tasks. Examples:
 - eating
 - washing or drying dishes
 - brushing hair or teeth
 - folding laundry
 - using the remote
 - turning pages of a book or newspaper

Home Plans for Spasticity

- Use your affected arm or hand as much as possible while completing tasks.



Home Plans for Spasticity: Moderate Functioning

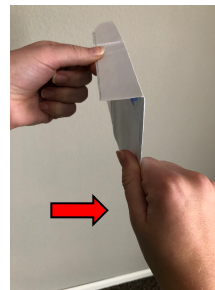


- Use a side pinch to complete tasks. Examples:
 - holding the bottom of a jacket when zipping
 - opening a zip lock bag full of food
 - holding an envelope while opening

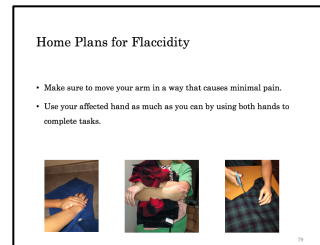
Therapist demonstrate side pinch (thumb over index PIP joint). Have client demonstrate back.

Home Plans for Spasticity

- Use a side pinch to complete tasks. Examples:



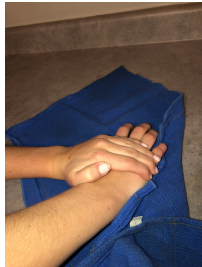
Home Plans for Flaccidity



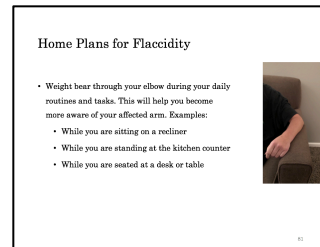
- Make sure to move your arm in a way that causes minimal pain.
- Use your affected hand as much as you can by using both hands to complete tasks. Watching your affected arm move may help rebuild nerves. Examples:
 - Use hand over hand method to wipe tables.
 - Cross your arms to carry objects, use your unaffected arm to support the affected elbow while carrying objects.
 - Use affected hand to stabilize paper or fabric.

Home Plans for Flaccidity

- Make sure to move your arm in a way that causes minimal pain.
- Use your affected hand as much as you can by using both hands to complete tasks.



Home Plans for Flaccidity



- Weight bear through elbow during your daily routines and tasks.

This will help you become more aware of your affected arm.

Examples:

- While you are sitting on a recliner, lean to affected side and weight bear through elbow
- While you are standing at the kitchen counter, lean into your affected elbow
- While you are seated at a desk or table

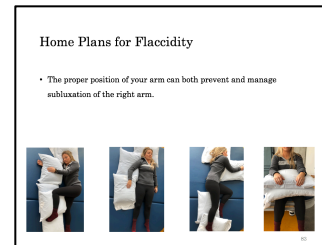
Therapist will show and teach client how to weight bear on affected elbow.

Home Plans for Flaccidity

- Weight bear through your elbow during your daily routines and tasks. This will help you become more aware of your affected arm. Examples:
 - While you are sitting on a recliner
 - While you are standing at the kitchen counter
 - While you are seated at a desk or table



Home Plans for Flaccidity



Only present if the client's right side is affected. Left side will be covered on page 84 and 85.

- The proper position of your arm can both prevent and manage subluxation of the right arm.
- Positioning of arm in lying and sitting are shown in photos.

Home Plans for Flaccidity

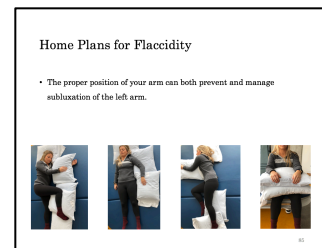
- The proper position of your arm can both prevent and manage subluxation of the right arm.



Home Plans for Flaccidity

Only present if the client's left side is affected.

- The proper position of your arm can both prevent and manage subluxation of the left arm.
- Positioning of arm in lying and sitting are shown in photos.



Home Plans for Flaccidity

- The proper position of your arm can both prevent and manage subluxation of the left arm.



Home Plans for Shoulder Subluxation

Home Plans for Shoulder Subluxation

- Weight bear through your affected arm during your daily routines and tasks. Examples:
 - While brushing teeth, place affected hand on countertop and lean into hand.
 - When you are cooking or cleaning, place hand on countertop or table and lean into hand.
 - When standing at church, a concert or theatre, place hand on seat in front of you; this will help support the weight of your arm.

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- Weight bear through your affected arm during your daily routines and tasks. This will help bring the humerus back into place and reduce the pull from gravity. Examples:
 - While brushing teeth, place affected hand on countertop and lean into hand.
 - When you are cooking or cleaning, place hand on countertop or table and lean into hand.
 - When standing at church, a concert or theatre, place hand on seat in front of you; this will help support the weight of your arm.

Home Plans for Shoulder Subluxation

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 - When standing at church, a concert or theatre, place hand on seat in front of you; this will help support the weight of your arm.

Home Plans for Shoulder Subluxation



Only present this slide if client's right side is affected. Left side will be covered on page 90 and 91.

If positioning was already covered with the client in the flaccidity section, you do not have to go over the information again.

- The proper position of your arm can help manage subluxation.
- Positioning of arm in lying and sitting are shown in photos.

Home Plans for Shoulder Subluxation

- The proper position of your arm can help manage subluxation.



Home Plans for Shoulder Subluxation

Only present this slide if client's left side is affected.

If positioning was already covered with the client in the flaccidity section, you do not have to go over the information again.

- The proper position of your arm can help manage subluxation.
- Positioning of arm in lying and sitting are shown in photos.

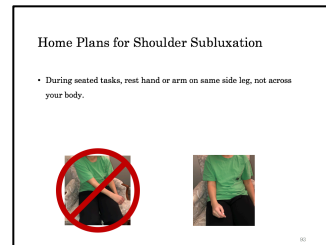


Home Plans for Shoulder Subluxation

- The proper position of your arm can help manage subluxation.



Home Plans for Shoulder Subluxation



- During seated tasks, rest hand or arm on same side leg, not across your body.

Therapist should demonstrate proper arm position and then have client demonstrate proper positioning.

- When your arm is lying across your body, the head of your humerus is pulled out even farther, causing more strain.

Home Plans for Shoulder Subluxation

- During seated tasks, rest hand or arm on same side leg, not across your body.



Home Plans for Edema: Lower Functioning

Home Plans for Edema:

- You can use your unaffected hand to move your affected arm. This can take place during a variety of times throughout your day.

Examples:

- sitting and relaxing
- morning routine
- nightly routine

- You can use your unaffected hand to move your affected arm. This can take place during a variety of times throughout your day.

Examples:
 - sitting and relaxing
 - morning routine
 - nightly routine
- Because your muscles are no longer moving the fluid on your affected side, passive movement will help to decrease the amount of fluid pooling.

Home Plans for Edema:

- You can use your unaffected hand to move your affected arm. This can take place during a variety of times throughout your day.

Examples:

- sitting and relaxing
- morning routine
- nightly routine

Home Plans for Edema: Moderate Functioning

Home Plans for Edema

- Move your affected arm as much as possible during daily tasks.

Examples:

- eating
- dressing
- making meals
- gardening

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- Move your affected arm as much as possible during daily tasks. Examples:
 - eating
 - dressing
 - making meals
 - gardening

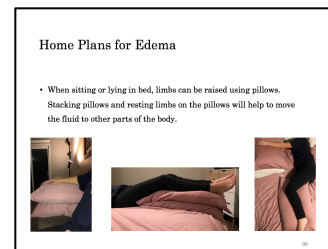
Home Plans for Edema

- Move your affected arm as much as possible during daily tasks.

Examples:

- eating
- dressing
- making meals
- gardening

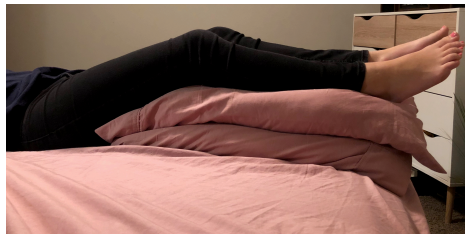
Home Plans for Edema



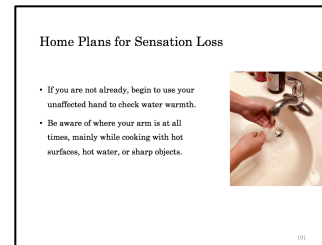
- When sitting or lying in bed, limbs can be raised using pillows.
Stacking pillows and resting limbs on the pillows will help to move the fluid to other parts of the body.
- Keep your hand above the level of your heart.
- Do not let your hand hang over the edge of the pillow.

Home Plans for Edema

- When sitting or lying in bed, limbs can be raised using pillows. Stacking pillows and resting limbs on the pillows will help to move the fluid to other parts of the body.



Home Plans for Sensation Loss



- The following ways are to prevent injury of your affected arm.
- If you are not already, begin to use your unaffected hand to check water warmth.
- Be aware of where your arm is at all times, mainly while cooking with hot surfaces, hot water, or sharp objects.

Home Plans for Sensation Loss

- If you are not already, begin to use your unaffected hand to check water warmth.
- Be aware of where your arm is at all times, mainly while cooking with hot surfaces, hot water, or sharp objects.



Home Plans for Sensation Loss

Home Plans for Sensation Loss

- While relaxing, lightly tap your affected arm from your forearm to your fingertips. Watch where you touch your arm and think of what you would be feeling.
- During your bath routine, rub a washcloth in a circular motion on your affected arm. Focus on the way the washcloth feels.

The following are ways to introduce sensations back to your body and retrain your brain to increase awareness of these sensations.

- While relaxing, lightly tap your affected arm from your forearm to your fingertips. Watch where you touch your arm and think of what you would be feeling.
- During your bath routine, rub a washcloth in a circular motion on your affected arm. Focus on the way the washcloth feels.


Home Plans for Sensation Loss

- While relaxing, lightly tap your affected arm from your forearm to your fingertips. Watch where you touch your arm and think of what you would be feeling.
- During your bath routine, rub a washcloth in a circular motion on your affected arm. Focus on the way the washcloth feels.

Home Plans for Sensation Loss

Home Plans for Sensation Loss

- When you pull coins out of your pocket or purse use your affected hand. Watch your hand touch the coins, and think about the texture and size of the coins.
- Use your affected hand to pick up utensils. Focus on the feeling of the utensil in your hand and the pressure you are applying.



- When you pull coins out of your pocket or purse, use your affected hand. Watch your hand touch the coins. Think about the texture and size of the coins.
- Use your affected hand to pick up utensils. Focus on the feeling of the utensil in your hand and the pressure you are applying. *Give other life examples such as picking up tooth brush, makeup, TV remote, gardening tools, or paint brushes.*

Home Plans for Sensation Loss

- When you pull coins out of your pocket or purse, use your affected hand. Watch your hand touch the coins, and think about the texture and size of the coins.
- Use your affected hand to pick up utensils. Focus on the feeling of the utensil in your hand and the pressure you are applying.



Plans to Try at Home

Plans to Try at Home

- Writing down at least one plan that you will complete at home this week will help you to remember to complete it.

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- Writing down at least one plan that you will complete at home this week will help you to remember to complete it.

Plans to Try at Home

- Writing down at least one plan that you will complete at home this week will help you to remember to complete it.

Plans to Try at Home

- At home this week I will...

Give client relevant handout(s). Collaborate with the client to develop home plan(s) for the upcoming week.

Plans to Try at Home

- At home this week I will...

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Plans to Try at Home

- At home this week I will...

Appendix C

Spasticity

Spasticity is abnormally high muscle tone.

If you ARE able to move your affected side:

Use your affected arm or hand as much as possible while completing tasks.

Examples:

- eating
- washing or drying dishes
- brushing hair or teeth
- folding laundry
- using the remote
- turning pages of a book or newspaper

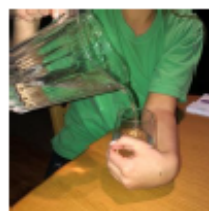
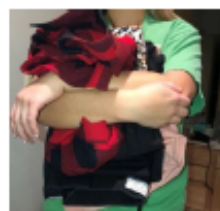
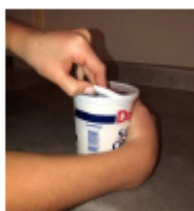
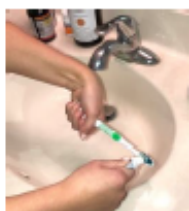
Use a side pinch to complete tasks.

Examples:

- holding the bottom of a jacket when zipping it
- opening a zip lock bag full of food
- holding an envelope while opening

Home Plan

At home this week, I will...



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Spasticity

Spasticity is abnormally high muscle tone.

If you ARE NOT able to move your affected side:

Weight bear on the affected side while completing tasks such as wiping down a table, reaching into a cupboard, or brushing your teeth.

Use both hands when completing tasks such as drinking from glass, eating food, cooking, and washing your face.

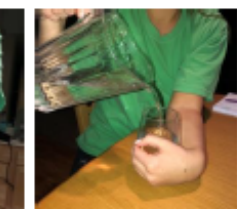
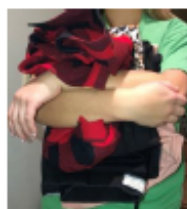
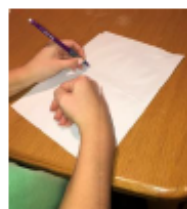
Use your affected arm or hand as much as possible throughout the day.

Examples:

- use your arm as a stabilizer to hold a sheet of paper while writing
- hold containers you need to open with your affected arm
- hold glass with affected hand while pouring water
- hold your toothbrush with your affected hand while applying toothpaste
- carry items such as clothes or magazines against your chest
- hold a bag with your affected arm while taking out items

Home Plan

At home this week, I will...



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Flaccidity

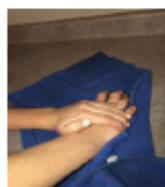
Flaccidity is when your muscles have extremely low tone and appear limp.

Use both hands to complete tasks.

Move your arm in a way that causes minimal pain.

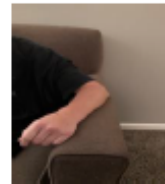
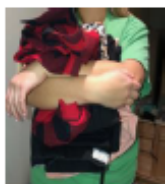
Examples:

- Use hand over hand method to wipe tables.
- Cross your arms to carry objects, use your unaffected arm to support the affected elbow while carrying objects.
- Use affected hand to stabilize paper or fabric.



Weight bear through your affected elbow. When you are:

- Sitting in a recliner, at desk or table
- Standing at the kitchen counter



If your therapist recommended a sling, remember to wear the sling during standing tasks.

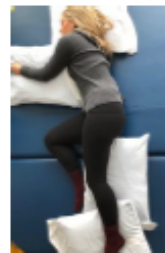
Home Plan

At home this week I will....

Positioning:

The proper position of your arm can manage flaccidity and prevent shoulder subluxation.

When right side is affected:



When left side is affected:



Shoulder Subluxation

Shoulder subluxation is when the humerus is located slightly lower than normal in the shoulder joint.

Weight bear through your affected arm. This will help bring the humerus back into place and reduce the constant pull from gravity.

Lean into your hand while:

- brushing teeth
- cooking or cleaning
- standing at church, a concert or theatre

During seated tasks, rest hand or arm on same side leg.

During standing tasks, wear the sling recommended by your therapist.

The following are tips to position the shoulder when lying or sitting to minimize subluxation

Home Plan

At home this week I will....

Positioning:

The proper position of your arm can manage subluxation.

When right side is affected:



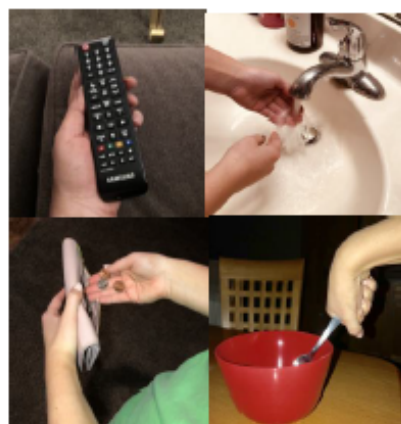
When left side is affected:



Sensation

Sensation Loss is when you may not be able to feel touch and/or temperature.

- If you are not already, begin to use your unaffected hand to check water warmth.
- Be aware of where your arm is at all times mainly while cooking with hot surfaces, hot water, or sharp objects.
- While relaxing, lightly tap your affected hand from your forearm to your fingertips. Watch where you touch your arm and think of what you would be feeling.
- During your bath routine, rub a washcloth in circular motion on your affected arm, focusing on the way it feels.
- Use your affected hand to pick up a tooth brush, remote control, utensils, gardening tools, or coins out of your purse/pocket. Focus on the feeling of the items in your hand and the pressure you are applying.



Home Plan

At home this week, I will

Edema

Edema is swelling caused by an increase in fluids trapped inside your body tissues.

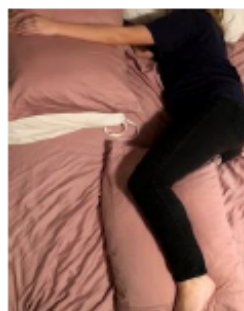
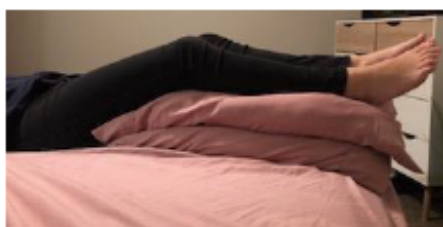
If you ARE NOT able to move your affected side:

Use your unaffected hand to move your affected arm while you are sitting and relaxing or during your morning or nightly routine.

If you ARE able to move your affected side:

Move your affected arm as much as possible during daily tasks such as eating, dressing, making meals, gardening, and more.

When lying in bed, limbs can be raised by stacking pillows and resting limbs on the pillows.



Home Plan

At home this week, I will...
