

EVALUATION OF THE EFFECTIVENESS OF INPATIENT STROKE EDUCATION FOR
THE TRANSITION FROM HOSPITAL TO PRIMARY CARE OFFICES: AN EDUCATION
NEEDS ASSESSMENT

By

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Abstract

Problem: Stroke is a significant health problem that affects 795,000 Americans per year. It is the leading cause of disability in the United States. Transition of care to outpatient settings can be very challenging for stroke survivors. Effective stroke education can help smooth the transition and reduce the risk of recurrent stroke. Often times, stroke education is provided during hospital stay; however, there is not a standard process to evaluate its effectiveness.

Project Aims: This quality improvement project conducted at a 300-bed community hospital in suburban metropolitan area consisted of three aims: (1) implement an education needs assessment amongst hospitalized stroke patients on the acute stroke unit prior to their transition of care to the outpatient setting; (2) identify strengths, areas for improvement, and gaps in the current inpatient stroke education process; (3) make recommendations on potential education topics to inform the development of community-based stroke education classes.

Project Methods: The Post Stroke Education Assessment (PSEA) survey was used to conduct the needs assessment during a two-month period. Eligible participants (n = 10) were first-time stroke patients being discharged. The PSEA survey was completed by patients and/or their caregivers prior to discharge. Descriptive statistics were used to analyze the data.

Project Findings: Strengths for the inpatient stroke education included adequate education frequency and on topics like what stroke is, action plans for reoccurrence of stroke, and medications. Areas for improvement included delivery of education folder at admission, diversifying education delivery methods, assessing patients' readiness to learn, and enhancing education topics on risk factors, residual deficits, prognosis, recovery, complications, warning signs/symptoms, impact on psychological and emotional health/family, follow-up appointments and local resources.

Conclusions: This project helped identify strengths, areas for improvement, and gaps in inpatient stroke-related education. This information could be used to improve the timing, delivery, and content areas of the education, which could eventually facilitate a smooth transition of care into an outpatient setting.

Key Words: inpatient stroke education; caregiver; health literacy; transition of care; post-stroke care.

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Introduction

Cerebrovascular accident (CVA) or stroke is a medical emergency. It occurs when there is disruption of blood supply within the brain, which can cause significant impairment of cerebral functions without early interventions. It is the leading cause of disability and the fifth cause of mortality in the United States (American Stroke Association [ASA], 2020).

Approximately 795,000 Americans suffer from a stroke each year, and more than 133,000 (16.7%) of these are fatal (ASA, 2020; Cameron, 2013). After intensive treatments, more than 80% are stroke survivors. They are then discharged from an acute care hospital into the outpatient setting for rehabilitation or follow-up. Life after stroke can be challenging, especially during the transition period from the hospital due to complicated medication regimens, rehabilitation schedules, coping with physical disabilities and complications associated with stroke, and recommended lifestyle modifications (Cameron, 2013). However, giving accurate, individualized, and time appropriate education to post-stroke patients and/or their caregivers prior to discharge from acute care hospitals can help to improve the transition of care to the outpatient settings or in follow up in with their primary care providers (PCPs) (Cameron, 2013; Danzl et al., 2016). Education topics which should be addressed for patients with chronic illness include disease prevention, disease-specific education, and self-management. It is also recommended that nurses use repetition and multiple teaching styles to increase education retention of patients (Cameron 2013; Danzl et al., 2016). DeMarco, Nystrom, and Salvatore (2011) state that patient education is a vital part of the continuum of care, and nurses are in the ideal position to ensure education is inclusive, accurate, and understood.

The Framingham Study, a well-known 26-year study on heart disease, identified that stroke is a leading cause of death and disability. After having one stroke, recurrence is common,

and most recurrent strokes are ischemic due to the high fatality rates in hemorrhagic strokes (Sacco, Wolf, Kannel, & McNamara, 1982). During the Framingham Study, 394 strokes occurred, 57% of which were ischemic. The rate of recurrent stroke was approximately 42% in men and 28% in women (Sacco et al., 1982). When adjusting for the presence of other cardiac risk factors prior to initial stroke, the recurrence rate decreases significantly. Comorbidities such as hypertension and heart failure should be appropriately treated with both medications and lifestyle modifications, which emphasizes a need for patient education. Patients should be educated on their risk factors for stroke, management of those risk factors, and the kind and amount of follow up that is required to help prevent reoccurrence of stroke as well as secondary complications (Sacco et al., 1982).

Like the Framingham Study in 1982, Omori et al. (2015) found that the two-year recurrence rate for ischemic stroke in Japan was 21.3%. The significant risk factors associated with the recurrence rate of stroke included hypertension, diabetes, and disability score at discharge. It was emphasized that “adequate treatment and management of risk factors by persistent health education for poststroke patients is urgently required to prevent recurrence and subsequent disabilities and to maintain quality of life in these patients,” (Oromi et al., 2015, p.NP339). Erdur et al. (2015) retroactively examined stroke patients on three stroke units in acute care hospitals, who were receiving optimum care of their risk factors. While there were a few incidences of recurrence, the rate of recurrence in this population was only 0.8% (Erdur et al., 2015). This urges prompt identification of stroke etiology and rigorous secondary prevention of risk factors, which can be partially achieved through adequate patient education and proper follow-up care (Erdur et al., 2015).

Statement of the Problem

Stroke is a potentially fatal disease, but those that survive a stroke are at high risk for recurrent stroke, secondary complications, and poor quality of life (ASA, 2020). Patients who experience stroke are 5 to 15 times more likely to experience a second stroke than the general population (Oromi et al., 2015). Stroke risk can be minimized with proper education to mitigate modifiable risk factors, but this health information is complex and requires thorough and repetitive education (Cameron, 2013; Danzl et al., 2016; Oromi et al., 2015). There are also loosely defined best practices for which stroke education topics should be taught and the way they should be taught.

There are several recurrent themes throughout the literature on the most important education topics for this population. These include pathophysiology of CVAs, risk factors for stroke, secondary complications, signs/symptoms of stroke, emergency medical services (EMS) activation, emotional health following stroke, and follow-up care (ASA, 2020). The American Heart Association/American Stroke Association (AHA/ASA) is the leading body for establishing best practice guidelines for the medical management of stroke. However, these guidelines lack specifications on key components of management and prevention such as education practices. The AHA/ASA guidelines recommend hospitals implement stroke education. However, there are no specifics on what topics of education are to be taught (Powers et al., 2019, p. e399). It is important to evaluate the delivery, implementation, and effectiveness of the patient education and assess patients' education needs. However, it is surprising that currently there is no a standard approach to evaluate the quality of post-acute stroke care education or a consensus on which outcomes should be used to assess its delivery (Bushnell et al., 2018).

The community partner for this project is a nationally recognized stroke center located in Olathe, KS. It is a 300-bed community hospital in suburban metropolitan area. It received the highest level of recognition available for three consecutive years by the AHA/ASA's "Get With the Guidelines." This prestigious recognition demonstrates the hospital's commitment to follow the research-based guidelines and meet the standards on the time between a patient's arrival and treatment with tissue plasminogen activator (tPA) (Olathe Health, n.d.). While the hospital being assessed follows best practice research and timeliness of appropriate treatment, there is not a formal evaluation process to assess the education given to stroke patients prior to discharge (Olathe Health, n.d.). The AHA gives a IIA recommendation for continuous quality improvement processes implemented by each major element of a stroke care system and the system as a whole (Powers et al., 2019).

Currently, stroke patients admitted to the acute stroke unit are supposed to receive the stroke education from nurses during their hospital stay on a regular basis. There are five education topics of emphasis mandated by the Joint Commission (J. Braklow, personal communication, March 13, 2020). The five topics are risk factors, warning signs, EMS activation, physician follow up, and discharge medications. These five topics are the only mandatory charting topics in the Cerner electronic health record each shift and upon discharge for stroke patients. It is unknown if the current patient education practice is effective to help patients' transition of care to an outpatient setting. In addition, development of community-based stroke education classes offered at this community hospital is under planning. It would be helpful to assess patients' education needs to guide development of curricular contents. Therefore, this quality improvement project conducted an education needs assessment to evaluate current

inpatient stroke education practices and identify strengths and areas for improvement based on the reported needs of patients to facilitate a smooth transition into the community setting.

Background and Significance

A literature search was conducted using CINAHL and PubMed databases. The American Stroke Association website was also reviewed as it is the leading source of stroke research in the United States. Search terms included “acute care stroke education,” “inpatient stroke education requirements,” “transition coaching for stroke,” and “discharge education for stroke patients.” Articles were included if they pertained to education for stroke patients while in the hospital or being discharged from the hospital. Articles were excluded if they were about transient ischemic attacks (TIAs) rather than strokes. Articles were also excluded if they evaluated community or outpatient settings or if they were published more than 10 years prior to this search excluding one well-known study that was conducted in 1982.

Types of Stroke

Stroke occurs when there is a sudden interruption of blood supply in the brain. Depending on the characteristics of interruption, strokes can be categorized into three types, including transient ischemic attack (TIA), ischemic stroke, or hemorrhagic stroke. Transient ischemic attack occurs when cerebral blood flow is blocked temporarily. Patients experience similar symptoms of a major stroke; however, they typically disappear after a few minutes or hours without residual effects. It is a warning sign for future stroke with one third of patients developing a major stroke within a year and 10-15% within three months (ASA, 2020). Ischemic stroke occurs when a blood vessel supplying blood to the brain becomes occluded by blood clots. It can be further differentiated into thrombotic or embolic strokes. Ischemic strokes account for 87% of all strokes (ASA, 2020). Hemorrhagic stroke occurs when a weakened blood

vessel ruptures in the brain and the leaking blood quickly increases intracranial pressure, causing compression, swelling, and damage to brain tissue. Hemorrhagic strokes are usually more lethal than ischemic strokes (ASA, 2020).

Prevalence and Impact of Stroke

According to the Centers for Disease Control and Prevention (CDC) (2020), one out of every 20 deaths in the U.S. is due to a stroke, and someone in the U.S. has a stroke every 40 seconds. Stroke is the fifth leading cause of death and the leading cause of long-term disability amongst Americans and is associated with high healthcare cost (\$34 billion annually). Depending on the locations of affected cerebral blood vessels and cerebral tissues, patients having stroke may suddenly experience difficulty speaking, understanding, paralysis or numbness of face, arm or leg, visual impairment, headache, and trouble with walking or balance. Early and timely intervention and management could help restore cerebral blood supply, limit cerebral damages, and facilitate recovery from stroke. However, if the cerebral damage is irreversible, patients can experience physical limitation and/or disability. For example, stroke reduces mobility in over half of its victims aged 65 or older (CDC, 2020). It is estimated that one in three Americans has at least one of the major risk factors for stroke (hypertension, hyperlipidemia, diabetes, obesity, or tobacco use), and proper management of these risk factors can reduce the risk of stroke (ASA, 2020; CDC, 2020). In one survey by the CDC, only 38% of respondents knew the warning signs of stroke and to call 911, implying that education on this highly prevalent and highly devastating disease is lacking (CDC, 2020).

Content of Education

There are loosely defined stroke education topics mandated by accrediting bodies (Nickles et al., 2013). The only specifications guiding stroke education in the acute care setting

are stroke performance measures which are monitored by all major stroke quality improvement organizations in the United States (Nickles et al., 2013). These performance measures are dictated by the Joint Commission and they require documentation stating patients/caregivers were given education on five subcomponents - risk factors, warning signs, EMS activation, physician follow up, and discharge medications (J. Braklow, personal communication, March 13, 2020). When compliance with these poorly defined educational guidelines was assessed, only 60% of patients registered in the Michigan Paul Coverdell National Acute Stroke Registry received stroke education consistent with endorsed performance measures (Nickles et al., 2013).

Content education topics that patients frequently reported to be lacking included signs and symptoms of stroke onset, managing depression and social isolation post-stroke, prevention of secondary complications, and insurance/legal concerns such as living wills (Danzl et al., 2016). Prevention of recurrent stroke and secondary complications can be highly complicated for many patients especially when it comes to complex medication regimens. There is level 1 evidence to support the use of secondary preventative medications following stroke, but due to ambiguous or absent discharge education, there is poor medication adherence in this population (Andrew et al., 2018). Medication adherence is a critically important step to preventing recurrence of stroke yet screening for and recognizing non-adherence is not yet an established part of any process measure (Bushnell, Arnan, & Han, 2014). If patients took 75% or less of their prescribed cardiac medications, the risk for stroke increases fourfold. Experiencing a non-fatal stroke is a predictor for non-adherence with cardiovascular prevention medications (Bushnell et al., 2014).

Bushnell et al. (2014) studied the transitional coaching for stroke (TRACS) program, which was a quality improvement program to reduce 30-day readmission, maximize stroke

prevention, and improve patient outcomes. The TRACS program required coaches to meet with patients one-on-one prior to discharge for transition coaching to discuss individualized risk factors, medications, instructions for stroke awareness, action to take for onset of new symptoms, and post-hospital follow up care (Bushnell et al., 2014). Similarly, Bushnell et al. (2018) created the Comprehensive Post-Acute Stroke Services (COMPASS) care model for patients transitioning from acute care to home. This program expands on the TRACS program. In the COMPASS program, educational materials were designed to optimize what matters most to patients, caregivers, and providers. Educational materials were also made consistent across the continuum of care for all post-acute providers in the health system. Discharge education included a local community services directory as well (Bushnell et al., 2018). This method of individualizing patient care is consistent with other studies that suggest generic discharge information does not prepare patients for the transition to home following a stroke (Andrew et al., 2018).

Up to half of all patients admitted with stroke or TIA are discharged directly home after acute hospital care (Andrew et al., 2018). Readmissions within 12 months are common, and many survivors have unmet needs in this time period. Comprehensive, individualized discharge planning has shown to improve long-term outcomes, yet only about half of patients receive this kind of individualized education. The Prescriptions, Ready to re-enter community, Education, Placement, Assurance of safety, Realistic expectations, Empowerment, Directed to appropriate services (PREPARED) questionnaire, Longer-term Unmet Needs after Stroke (LUNS) questionnaire, and open-ended questions by surveyors revealed many unmet needs in stroke patients post discharge (Andrew et al., 2018). Commonly reported unmet needs included lack of

preparation for emotional changes, lifestyle modifications, follow-up appointments, community services available, and prevention of recurrent strokes (Andrew et al., 2018).

Delivery Methods of Education

While the verbal delivery method of education was preferred by health care professionals, it was reported as overwhelming to many patients. Visual delivery methods such as videos proved to help some patients with retention, but this method was found to be underutilized (Danzl et al., 2016). Written information was identified as helpful for the chronic phase of stroke after patients were discharged from hospitals. This method allows patients to reference information that may have bypassed them initially (Danzl et al., 2016). Overall, patients expressed the need for a variety of education delivery methods to increase education retention (Danzl et al., 2016). It is suggested that discharge information is given in large font at a 7th to 8th grade reading level with a one-page or less summary (Bushnell et al., 2014).

Timing of Education

It was also determined that the timing of education is vital. The immediate post-stroke period is overwhelming, and education is often not well received by patients at this time. Patients reported a need for repetition across the continuum of care from admission to the acute care setting into the chronic phase at home (Cameron, 2013; Danzl et al., 2016). It is recommended that education begin upon admission to the hospital and continue through rehabilitation and chronic management within the community in order to prevent recurrent stroke and maximize quality of life (Cameron, 2013).

Need for Standardized Stroke Education

While the ASA website has numerous education topics listed, there is a lack of consensus on specific education requirements in the literature. The ASA website provides education on

modifiable risk factors such as blood pressure, tobacco use, diabetes, carotid artery disease, peripheral artery disease, atrial fibrillation, sickle cell disease, high cholesterol, poor diet, inactivity, and obesity (ASA, 2020). The ASA website also provides education on non-modifiable risk factors including age, gender, race, heredity, and prior stroke, TIA, or myocardial infarction. Other educational topics listed on the ASA website are stroke symptoms (e.g. face drooping, arm weakness, and speech difficulty), EMS activation, and the difference between ischemic and hemorrhagic strokes (ASA, 2020). They also include brief explanations of treatment options such as tPA and other endovascular procedures. Examples of expected timelines and a list of specialists involved for each step of the treatment continuum are provided on their website (ASA, 2020). While all of this information is important, the transmission of education from health care providers/agencies such as the ASA to patients relies on more than just generic content. Every stroke is different; therefore, individual risk factors, preferred education delivery methods, appropriate timing, and repetition of health education all play a vital role (Cameron, 2013; Danzl et al., 2016).

Barriers to Effective Education

Due to the lack of stroke specific data available, a literature review of best practices for education in acute care settings was adapted from literature on other chronic diseases (Cameron, 2013). Evidence suggests that each learner and/or their designee should be assessed for literacy level, learning style preference, and potential educational barriers (Danzl et al., 2016). It is also highly recommended that nurses and providers utilize repetition when educating stroke patients and their families (Andrew, Busingye, Lannin, Kilkenny, & Cadilhac, 2018; Cameron, 2013; Danzl et al., 2016). Danzl et al. (2016) looked at qualitative data in the form of surveys from stroke patients who had discharged home from acute care hospitals. This data suggests that

oftentimes patients do not ask questions to providers because they do not know what to ask. Therefore, it is recommended that healthcare providers have the responsibility to initiate education opportunities on a frequent basis (Danzl et al., 2016). Three components - content, timing, and delivery - were identified as major components for appropriate education for this population (Danzl et al., 2016).

Definition of Terms

The following are the key terms used in this project. The theoretical definitions of these terms are primarily from Merriam-Webster. Other sources utilized include the Department of Health and Human Services and the Centers for Medicare and Medicaid Services.

Acute care setting: Short-term and usually immediate medical care. For this project, the acute care setting refers to the treatment setting where patients find themselves shortly after onset of stroke symptoms in order to prevent further complications. This setting includes emergency departments and inpatient hospital units often after treatment with tPA, other endovascular procedures, or conservative medical management of stroke.

Outpatient setting: A clinic or associated facility where care is sought but not for an overnight stay. For this project, the outpatient setting referred to the phase of care after patients were discharged from the hospital into the community and receiving care intermittently by primary care providers.

Caregiver: Someone who provides direct care to a child, the elderly, or the chronically ill, who cannot care for themselves fully. For this project, caregiver referred to any family member or designated adult who was involved in caring for a stroke survivor.

Health literacy: The degree to which an individual can obtain, process, and comprehend the basic health information needed to make informed health decisions. For this project, health literacy referred to a patient's capacity to understand health information.

Transition of care: The movement of a patient from one setting to another. For this project, transition of care referred to the transitioning of a patient from the inpatient, hospital setting into the outpatient, community setting.

Project Aims

This quality improvement project conducted at a 300-bed community hospital in suburban metropolitan area consisted of three aims: (1) implementing an education needs assessment amongst hospitalized stroke patients on the acute stroke unit prior to their transition of care to the outpatient setting; (2) identifying strengths, areas for improvement, and gaps in the current inpatient stroke education; and (3) making recommendations on potential education topics/handouts to inform the development of community-based stroke education classes aiming to enhance and facilitate a smooth transition from inpatient to outpatient care.

Project Questions

1. Did the current stroke education requirements for nurses at the community hospital provide adequate information to stroke patients regarding content, delivery, and timing prior to discharging into the community?
2. What were the strengths, areas for improvement, and gaps in the current inpatient stroke education provided when compared to common themes in the literature review of important stroke education topics and self-reported unmet education needs of patients?

3. What education topics/handouts were most important for inpatient stroke patients discharging into the community and which topics should be reemphasized in future community-based stroke education classes?

Theoretical Framework

For this quality improvement project, the Adult Learning Theory (ALT) was applied. Malcolm Knowles developed the ALT with the idea that “adults” are those who have the self-concept of being in charge of their own life, being responsible for their own decisions, and living with the consequences of those decisions (Knowles, n.d.). This theory is appropriate for the project at hand because adult stroke patients are educated by health care professionals on ways to optimize quality of life and prevent recurrence. When adequate education is provided, adults are enabled to make their own health decisions (Knowles, n.d.).

The first concept in the ALT emphasizes that adults tend to put their effort into learning when learning benefits them directly; therefore, discharge education should be given in a manner that stresses the importance to the individual patient (Knowles, n.d.). This further argues that generic discharge education is not helpful when compared to individualized education (Andrew et al., 2018). The second concept is that adult learners have a need to be self-directed. Therefore, rather than telling patients what to do, we as providers, should empower them to be involved in their own health care decisions. Assessment of what is important to each patient can play a role in the effectiveness of education (Andrew et al., 2018). Another important point in Knowles’ theory is that adults become ready to learn when they perceive a need to learn (Knowles, n.d.). This correlates with the finding that timing is a key factor in the success of health education (Cameron, 2013; Danzl et al., 2016). Finally, the ALT suggests that adults are motivated to learn by a variety of factors including both extrinsic and intrinsic (Knowles, n.d.). In conclusion,

patients should be motivated to learn by not only emphasizing the prevention of stroke or the hopes of discharging home rather than a skilled nursing facility but by intrinsic factors such as maintaining independence and control over their own health (Danzl et al., 2016).

The impact of stroke on patients' health including cognition varies depending on stroke types, locations, time passed before treatment, treatment modality, and co-existing comorbidities. Therefore, cognitive deficits following stroke should be considered when applying the ALT to this vulnerable population. In some cases, patients with minor stroke would be able to make their own health decisions, but in other cases, they may turn to a trusted friend, family member, or caregiver to help make their health decisions. This is especially true in the acute phase of stroke when symptoms are at their worst.

Conceptual Model

The conceptual model used for this project was the Plan-Do-Study-Act (PDSA) model. The PDSA model is used to guide quality improvement projects to implement a change using four steps (Agency for Healthcare Research and Quality [AHRQ], 2015). Step one was the planning stage in which the Project Director developed project aims and steps needed to accomplish those aims. The do stage was the implementation stage of the project in which the Project Director conducted the education needs assessment among eligible stroke patients. Next, was the study stage where the Project Director examined survey results and analyzed data to determine strengths and areas for improvement of the current inpatient stroke education process. Finally, the act stage was where the Project Director presented findings of the project to hospital stakeholders to inform their current processes and curriculum for future community-based stroke classes (AHRQ, 2015).

Project Methods

Design

This project was a quality improvement project that aimed to conduct an education needs assessment among inpatient stroke patients, identify strengths, areas for improvement, and gaps in the current education process, and make recommendations on potential education topics for the development of community-based stroke education classes. This project met the criteria for a quality improvement project because it analyzed a system's performance and searches for ways to improve the quality of care provided (Bonnell & Smith, 2018). The Post Stroke Education Assessment (PSEA) survey developed by the Project Director was used to conduct the education needs assessment (Appendix A). The survey was administered to eligible patients or their caregivers prior to discharge into the community setting.

Setting

This quality improvement project was conducted at a 300-bed community hospital located in Olathe, KS. In 2019, this hospital took care of 223 patients with a diagnosis of ischemic stroke (n = 184), subarachnoid hemorrhage (n = 8), intracerebral hemorrhage (n = 14), or transient ischemic attack (n = 17) (K. Super, personal communication, March 18, 2020). Of these, 111 patients were discharged home, two to home with hospice, 14 to hospice in health care facilities, 29 to other acute care facilities, 48 to skilled nursing facilities, nine to inpatient rehabilitation facilities, one to long term care hospital, three to intermediate care facilities, five expired, and one left against medical advice (K. Super, personal communication, March 18, 2020). Stroke patients emergently enter the selected health system through the 29-bed Emergency Room. After being assessed, the patient may be transferred to either the Critical Care Unit (CCU) or the 24-bed acute stroke unit. Patients are transferred to the CCU only if they receive t-PA treatment, which requires close monitoring for 24 hours. All the registered nurses

(RNs) on the acute stroke unit are required to maintain National Institute of Health Stroke Scale certification to care for this unique patient population. Stroke patients and/or their caregivers are supposed to receive stroke education from RNs regularly during their hospital stay.

Unfortunately, there is not a formal process to assess patient's understanding of education provided in preparation for the transition to outpatient care.

Olathe is located in Johnson County, Kansas. The population of Olathe is 139,605 (U.S. Census Bureau, 2018). The population is 75.7% white, 6.1% African American, 11.3% Hispanic, and 6.9% other races. The average household income in 2018 was \$85,318 and the poverty rate was 6.4% (U.S. Census Bureau, 2018). There are three other major hospitals in Johnson County including Overland Park Regional, Saint Luke's South, and Advent Health Lenexa. The nearest Comprehensive Stroke Centers, which unlike the community hospital being assessed, offer advanced endovascular procedures are University of Kansas Health System, Research Medical Center, and St. Luke's Hospital of Kansas City.

Sample

Participants for this project were drawn from a convenience sample of patients with stroke who were being discharged from the acute stroke unit. Eligible participants included patients: (1) who suffered ischemic or hemorrhagic strokes for the first time; and (2) who were discharged to a lower level of care including home, home with home health or other outpatient services, or to short-term rehabilitation facilities. Patients were excluded if they: (1) had a diagnosis of transient ischemic attack; (2) had a recurrent stroke; or (3) were being discharged to higher levels of care (such as a Comprehensive Stroke Center), same level of care (such as another acute care hospital), or to hospice. Eligibility of patients was identified by trained acute

stroke unit staff RNs and the Project Director prior to patient's discharge. Based on the hospital's 2019 discharge data on stroke patients, the expected sample size for this project was 15 patients.

Data Collection

The Post Stroke Education Assessment (PSEA) Survey was used to conduct the education needs assessment over a period of eight weeks from June to July 2020. The PSEA survey was developed by the Project Director and based on the current literature of pertinent topics related to stroke patient education. The PSEA survey was reviewed by the DNP project committee and revisions were made to improve the readability and structure of the survey. In addition, the face validity of the PSEA survey was assessed and confirmed by an experienced acute care nurse practitioner at the hospital. This survey consisted of 10 questions and took approximately 10 - 15 minutes to complete. Question #1 assessed if the patient received a stroke education folder, which is mandated in the hospital's policy for the care of stroke patients (Toms, 2011). Question #2 assessed delivery methods of education. Question #3 assessed timing of education. Question #4 assessed frequency of education. Question #5 assessed the level of education received on 13 pertinent education topics identified from the literature review. Question #6 assessed gaps in the current stroke education process. While surveys were anonymous, questions #7 - #9 collected basic demographic data including age, race/ethnicity, and gender. Finally, question #10 assessed the relationship of the respondent to the patient.

Eligible patients and/or their designated caregivers were asked to fill out the PSEAs prior to discharge from the acute stroke unit. Instructions were included explaining how to complete the survey. Staff RNs were trained on the process of handing out, explaining, and collecting surveys. Surveys were then collected by trained staff after patients and/or their caregivers filled them out. Surveys were placed in a labeled folder kept on the acute stroke unit after patient

discharge. Completed surveys were removed weekly by the Project Director. The Project Director then transcribed data from surveys into a personal, password protected laptop utilizing Microsoft Excel software on a weekly basis. The data collection phase began after obtaining institutional review board (IRB) approval and the training of staff was complete. After the final day of data collection, extra copies of surveys and the survey collection folder were removed from the unit. The de-identified paper copies of the surveys were kept by the Project Director in a locked file cabinet.

Evaluation

Descriptive statistics were used to describe the characteristics of the project participants including age, race/ethnicity, and gender. The Post Stroke Education Assessment yielded both qualitative and quantitative data. For quantitative data, mean and standard deviation were reported for continuous variables and frequency and percentages were reported for categorical variables. Descriptive qualitative analyses were performed on responses to the open-ended question on the PSEA (question #6).

Strengths were identified by correct or affirmative answers on questions #1 and #3. Question #2 showed strengths if more than one delivery method was circled. Answering question #4 as “once per shift/twice per day” or “at every opportunity” also helped to identify strengths. Question #5 parts a-m showed strengths if the patient/caregiver scored the item a 2 or 3. Areas for improvement were identified by incorrect or negative answers on questions #1 and #3. Question #2 showed area for improvement if only one delivery method was circled. Answering question #4 as “once on admission,” “once on discharge,” or “once per day” also helped to identify the need for improvement. Question #5 parts a-m helped identify educational

deficits/needs if the patient/caregiver scored the item a 0 or 1. Question #6 identified gaps in the current stroke education process.

Human Subject Protection/Protected Health Information

As a student at the University of Kansas Medical Center (KUMC), the Project Director was required to obtain CITI Human Subject Protection Certification. The project proposal was submitted to the IRB at the University of Kansas Medical Center for determination of quality improvement status. The project was initiated in June 2020 after IRB approval was received on May 28, 2020. All surveys administered in this project were on a voluntary basis and informed consent was not sought as this was part of quality improvement process of standard healthcare provided at the community hospital. Participation in this education needs assessment had minimal risk to patients. The Quality Review and Research Committee (QRRC) at the community hospital deferred IRB approval to KU; however, a letter of support (Appendix B) for this project was sought from our community partner.

Privacy, Data Storage, & Confidentiality

Patient privacy was protected by keeping surveys anonymous. Data were collected on paper and transcribed by the Project Director into an electronic spreadsheet. Completed surveys were each given a number written in the upper right corner as data were transcribed to determine which paper copy corresponded with which line of data in the electronic spreadsheet. The paper copies of surveys were collected by trained staff and placed in a folder on the acute stroke unit, which was emptied each week by the Project Director. The Project Director entered the data into a personal, password protected laptop each week. All paper copies of the surveys were kept in a locked file cabinet. De-identified electronic data were kept and shared with hospital stakeholders involved in creating the community stroke education classes. No personal health information was

collected on the surveys, which greatly minimized the risk of any confidentiality breaches. Once again surveys were conducted on a voluntary basis that identified up front what kind of data were asked of patients.

Results

Characteristics of Project Participants

The project was initiated on June 8, 2020. A total of 10 stroke survivors were recruited during the 8-week project implementation period. The characteristics of the project participants were summarized in Table 1. As expected, the majority of the participants were 70 years old or older (n = 7, 70%). There were 30% participants who were either in their 50s (n = 1, 10%), 40s (n = 1, 10%), or 30s (n = 1, 10%). More than half of the participants were male (n = 6, 60%). There was a lack of diversity in the project participants with all of the participants being Caucasians (n = 10, 100%).

Post Stroke Education Assessment Survey Results

The PSEA survey was used to conduct the educational needs assessment among the stroke survivors who were being discharged from the acute stroke unit. Among the 10 PSEA surveys, seven (70%) were completed by the participants themselves and three were completed by either participants' spouse (n = 2, 20%) or other family members (n = 1, 10%). The results of the PSEA survey were displayed in Table 2.

Received Stroke Education Folder Upon Admission

Of the ten surveys collected, only 50% of participants (n = 5) indicated that they did receive a stroke education folder on admission to the hospital. The other half of participants (n = 5) responded that they did not receive a stroke education folder. This is concerning as the stroke education folder is expected to be given to the stroke patients upon admission. However, it was

unknown whether the survey responders (patients themselves or caregivers) were not aware of the stroke education folder even if it was delivered or nursing staff actually forgot to deliver it. This is worth for further investigation and is an area for improvement in raising patients' awareness of the educational materials.

Education Delivery Methods

In the PSEA survey, participants were asked about the education delivery methods used by the healthcare team to educate them about stroke-related topics. Verbal education was the most commonly used delivery method that was reported by 90% of participants (n = 9), followed by written education materials (n = 5, 50%). No patients reported the use of videos in their stroke education. Four out of ten respondents (40%) reported the use of more than one education delivery method (i.e. combination of verbal and written).

Readiness for Stroke Education

When asked if the hospital staff members assessed the patient's readiness to learn prior to providing education, 50% of patients stated no (n = 5) and 50% of patients stated yes (n = 5). The mixed results suggested variations among health care providers in their assessment of patients' readiness for stroke education. This clearly indicates an area for improvement to emphasize the importance of assessing patient's readiness for receiving stroke education. This would help increase the effectiveness and retention of stroke education.

Frequency in Stroke Education

When asked how often patients received stroke education during their hospital stay, the majority of participants (n = 8, 80%) reported receiving it at least once per day, including 20% receiving it once per shift/twice per day (n = 2) and 20% receiving it at every opportunity (n = 2). Only 20% of participants stated that they received the education on admission only.

Level of Education on Various Stroke-Related Topics

In the PSEA survey, the participants were asked to evaluate the level of education they received using a four-point Likert scale on 13 various stroke-related topics, including what is a stroke, causes/risk factors, residual deficits, prognosis, recovery, complications, warning signs/symptoms, impact on psychological/emotional health and family, reoccurrence, follow-up appointment, medications, and local resources. An “0” indicates “no education/I didn’t know that this topic should be a concern”; “1” indicating “little education/still having concerns about this topic”; “2” indicating “moderate education/understanding this topic pretty well”; and “3” indicating “sufficient education/feeling confident in managing this aspect of my health”. The results of education level on these 13 stroke-related topics are presented below.

What is Stroke. For the education topic “what a stroke is and how it affects the body”, more than half of the participants (n = 6, 60%) felt that they received either moderate (n = 4, 40%) or sufficient level of education (n = 2, 20%). However, there were 40% participants who reported receiving none (n = 3, 30%) or little education (n = 1, 10%) on this topic and they were having concerns.

Causes and Risk Factors. Participants were asked to rate their level of education on “what causes a stroke and what risk factors I had for stroke”. Only 40% of participants (n = 4) reported that they received moderate (n = 2, 20%) or sufficient level of education (n = 2, 20%) on the causes and risk factors for stroke. More than half of participants (n = 6, 60%) felt they received inadequate education on this topic with 20% receiving none (n = 2) and 40% receiving little education (n = 4).

Residual Deficits. When asked about the education topic on “what residual deficits I will experience from my stroke”, only 40% of participants felt they received either moderate (n = 2,

20%) or sufficient education (n = 2, 20%) on this topic. More than half of participants (n = 6, 60%) had concerns on the residual deficits caused by stroke as they reported receiving none (n = 4, 40%) or little education (n = 2, 20%) on this topic.

Prognosis. The responses to the survey question asking “what is my prognosis with and without my prescribed treatments” indicated that 20% (n = 2) of participants received no education, 40% (n = 4) received little education, 20% (n = 2) received moderate education, and 20% (n = 2) received sufficient education.

Recovery. For the education topic “what I can do to speed up my recovery and maintain my current level of mobility,” 60% of participants reported receiving insufficient education with 20% (n = 2) receiving no education and 40% (n = 4) receiving little education. Only 40% of participants reported sufficient education with 20% (n = 2) receiving moderate education and 20% (n = 2) feeling confident on this topic.

Complications. When asked about level of education on “what other complications I am at risk for after my stroke”, 30% (n = 3) of participants reported receiving no education, 30% (n = 3) received little education, 30% (n = 3) received moderate education, and only 10% (n = 1) received sufficient education.

Warning Signs/Symptoms. For the education topic related to warning signs/ symptoms of a stroke, the majority of respondents (n = 6, 60%) felt they received inadequate education with 20% (n = 2) receiving no education and 40% (n = 4) receiving little education. Only 20% of respondents (n = 2) reported receiving moderate education and 20% (n = 2) reported receiving sufficient education on this topic.

Impact on Psychological and Emotional Health. When asked about “how stroke will affect my psychological and emotional health”, 80% of respondents (n = 8) reported receiving

inadequate education on this topic with 60% (n = 6) reporting no education and 20% (n = 2) receiving little education. This certainly highlighted this topic as an area for improvement in the education. Only 10% (n = 1) reported moderate education, and 10% (n = 1) felt receiving sufficient education.

Impact on Family. When asked “how stroke will affect my family unit and role expectations”, 40% (n = 4) of participants received no education, 20% (n = 2) of participants received little education, 20% (n = 2) of participants received moderate education, and 20% (n = 2) of participants received sufficient education. This result could suggest that education regarding long-term impact of stroke on family is needed.

Reoccurrence. Responses to the education topic “what I should do if I think I am having another stroke” indicated that half of the participants felt they received inadequate education with 10% (n = 1) receiving no education and 40% (n = 4) receiving little education. In contrast, the other half of participants reported receiving adequate education with 10% (n = 1) receiving moderate education and 40% (n = 4) receiving sufficient education that they felt confident in managing this aspect of their health.

Follow-up Appointments. When asked about the education topic regarding “which providers I should follow up with and how often”, 30% (n = 3) of participants reported receiving no education and 30% (n = 3) receiving little education. This indicated that more than half of participants had concerns about follow-up appointments. Only 20% (n = 2) of respondents felt receiving moderate education, and 20% (n=2) receiving sufficient education.

Medications. With regarding “which medications to take and how often to take them”, 20% (n = 2) of respondents reported receiving no education, 30% (n = 3) of respondents reported

receiving little education, 30% (n = 3) of respondents reported receiving moderate education, and 20% (n = 2) of respondents reported receiving sufficient education.

Local Support Resources. Finally, when asked about the education topic on “what local resources are available to help me”, more than half of the participants reported receiving inadequate education with 30% (n = 3) receiving no education and 30% (n = 3) receiving little education. Only 40% of participants felt receiving adequate education with 30% (n = 3) receiving moderate education and 10% (n = 1) receiving sufficient education.

Additional Suggested Education Topics

An open-ended question was used to ask participants to identify additional stroke-related education topics that they would like to learn. A total of four participants (40%) provided their responses to this question (Table 3). Descriptive qualitative analysis was used to identify the common themes of education topics that participants suggested. These included memory trouble post stroke, depression post stroke, the typical progression back to normal, prevention of recurrent stroke, and medication instructions. Two patients identified the topic of memory trouble post stroke while all the other themes had only one respondent indicated it as an area for improvement. The majority of respondents (60%) did not list any additional themes that required further education.

Discussion

This quality improvement project aimed to conduct an education needs assessment among inpatient stroke patients to evaluate the effectiveness of current inpatient stroke education and make recommendations for the development of community-based stroke education classes. Overall, the findings from this education needs assessment revealed mixed results regarding the effectiveness of the inpatient stroke education. Based on feedback received from 10 participants,

strengths, areas for improvement, and gaps in current inpatient stroke education were identified. The strength of current inpatient stroke education included appropriate frequency of education. It is encouraging that 80% (n = 8) of patients reported being educated at least one per day, among which 20% (n = 2) being educated twice per day and 20% (n = 2) being educated at every opportunity. As reported in the literature, stroke is a complex disease and requires repetitious education for patients and families (Andrew, et al., 2018; Cameron, 2013; Danzl et al., 2016). It is recommended for healthcare providers to continue this practice to ensure that patients and their caregivers receive frequent education to reinforce the delivery of content. In addition, more than half of participants were aware of what a stroke is and how it affects the body. This indicated that patients were appropriately educated for the reason of their hospitalization and actually experienced the immediate effects of stroke on their body.

Despite of a relatively small sample size, areas for improvement for the inpatient stroke education were clearly identified, including delivery of stroke education folder, education delivery methods, timing, and specific stroke-related education topics. Enhancing the delivery of stroke education folder was the first area for improvement. As mandated by the hospital's stroke education policy, each stroke patient should be given a stroke education folder upon admission to the hospital. These folders contain helpful education materials for patients and families. The PSEA surveys revealed that only 50% (n = 5) of patients recalled being given a stroke education folder upon admission. This indicated that half of the patients were either not aware of the education folder if given or did not receive such a folder at all. It is concerning that these patients failed to receive important written education on stroke. Strategies to enhance the delivery of the education folder to patients and/or caregivers are needed.

Another area for improvement is the delivery method of education. The education needs assessment survey found that only 40% (n = 4) of the respondents identified more than one delivery method of education (i.e. verbal, written) was used. This shows that the majority of patients (n = 6, 60%) were educated by using only one method, most of which was verbal education. None of the respondents indicated that visual or video delivery methods were used in their stroke education, thus making this medium vastly underutilized. Research has shown that use of visual or video delivery methods is beneficial to not only provide patients with a variety of teaching methods but also to decrease ambiguity and confusion when being spoken to by multiple providers (Danzl et al., 2016). This is certainly an area to explore for the possibility to incorporate visual or video delivery of education so that patients can view and review at their own pace during hospitalization and at home after discharge.

Assessing patients' readiness for stroke education is identified as another area for improvement. According to the PSEA survey results, half of the participants reported that healthcare providers did not assess their readiness to learn before delivering health-related information. Multiple physical and psychological factors could affect patients' readiness to learn, especially among stroke patients whose physical and cognitive functions are directly impacted by stroke itself. If the patient is not ready to learn, effectiveness of the education is likely reduced. Therefore, it would be beneficial if healthcare providers assess patients' readiness to learn before delivering education.

The content of stroke education provided at the community hospital was assessed by asking participants to rate their level of education on a total of 13 stroke-related topics. Topics that were identified as strengths (at least 50% participants reporting adequate education) by the surveys were "What a stroke is and how it affects the body," "What I should do if I think I am

having another stroke,” and “Which medications to take and how to take them.” Among these, “What a stroke is and how it affects the body.” was rated by most participants (n = 6, 60%) as receiving moderate or sufficient education. Topics that were identified as areas for improvement (less than 50% participants reporting adequate education) include risk factors for stroke, residual deficits from stroke, prognosis with and without prescribed treatments, how to speed up recovery or maintain mobility, secondary complications of stroke, warning signs/symptoms of stroke, psychological and emotional impact of stroke, how stroke can affect family units and role expectations, which providers to follow up with and how often after discharge, and what local resources are available to stroke survivors. The lowest scored topic was “How stroke will affect my psychological and emotional health” with 80% (n = 8) of participants reporting receiving no or little education. These findings are consistent with the literature, which states that mental health concerns are often under addressed amongst stroke survivors (Danzl et al., 2016). It is important to enhance education on these specific stroke-related topics as the majority of them are directly related to transition of care at home and outpatient setting.

One of the project aims was to make recommendations on potential education topics for community-based stroke education classes. The project participants had the opportunity to share additional education topics that they would like to learn more about on the PSEA survey. While most of the respondents did not offer any suggestions, four gaps in our community partner’s education process were identified. First, two respondents wanted to know more about memory troubles post stroke. Second, one respondent wanted to be educated on depression following their stroke. This was congruent with one of the identified areas for improvement regarding impact of stroke on psychological and emotional health. Third, one respondent identified a lack of understanding on the typical progression back to normal. Finally, one respondent wanted to

learn more about the prevention of recurrent strokes. These additional education topics could be potentially added to the current education folder, daily education, or developed into the community-based stroke education classes.

Implications for Clinical Practice

Plans have been made to disseminate project findings to hospital stakeholders, including recommendations on areas for improvement in the inpatient stroke education process and pertinent education handouts from American Stroke Association (ASA) to be added to the current stroke education folder to enhance patient education. The ASA has a “Life After Stroke Guide” for patients that provides information on what a stroke is, how a stroke is diagnosed, physical changes after stroke, cognitive and communication changes after stroke, emotional and personality changes after stroke, rehabilitation options after stroke, prevention of recurrent stroke, signs and symptoms of stroke, and national resources for stroke survivors (ASA, 2020). This guide addresses mostly all of the areas for improvement identified from the PSEA surveys and would be a vital resource for patients to supplement their inpatient education with.

These project findings can be used to improve inpatient stroke education by guiding hospital stakeholders on what areas of stroke education need to be improved. By evaluating what information patients/caregivers are retaining and what information is not understood, nurses, physicians, and other staff members can further direct their education. It is also important for the transition of care from inpatient to outpatient that stroke education be consistent and repetitive in order to maximize retention of information by patients. Adding an education checklist that tracks patient progress and having the stroke education folders provided by the hospital follow the patient from admission into the hospital out into the community setting (home, outpatient visits, rehabilitation centers, skilled nursing facilities, etc.) would be beneficial as well. The

community-based stroke education classes that the community hospital is looking to create could benefit greatly from having patients bring their stroke education folders and education checklists in order to re-teach points that patients are still struggling with.

Specifically, doctorally-prepared nurses can utilize these findings in their clinical practice by emphasizing that not only is education content vital but so is the delivery and timing of education. DNP nurses can work in numerous settings that see a vast array of patient populations. They also interact with people of all ages, races, socioeconomic backgrounds, and education levels. While having a checklist of education topics to cover is a good start, it cannot be the only means of educating patients. DNP nurses should assess what patients/caregivers have already been taught, their current level of understanding of the most important topics, and what aspects of health are most important to the patient. Being in an optimal position to teach, they should use repetition and multiple teaching styles in order to increase retention amongst their vulnerable patients.

Limitations

There were several limitations for the project that are worth noting. The first limitation was the small sample size ($n = 10$). This could have limited the scope of the education needs assessment. The estimated sample size for the project was 15 participants, based on the 2019 discharge data on stroke patients. Unfortunately, this goal was not met due to many challenges encountered during the project implementation, especially in the midst of the COVID-19 pandemic. First, the administration and collection of the PSEA survey mainly relied on the nursing staff on the acute stroke unit. The Project Director provided appropriate training to staff nurses during shift change on three consecutive days and email reminders were also sent at the initiation of the project. Multiple attempts were made to engage the staff nurses in administrating

the PSEA surveys. The Project Director increased visits to the acute stroke unit from once per week to twice per week and provided both email and verbal reminders to staff nurses throughout the project. However, there appeared to be a lack of buy-in from the staff nurses in assisting in distributing the PSEA survey. Second, visitor restriction policy due to COVID-19 precautions could have impacted the completion of the PSEA survey by certain patients/caregivers. For example, some patients may not be able to complete the survey by themselves without assistance from family members. This could be due to cognitive defects or physical limitations caused by stroke. Patients who tested positive for COVID-19 had to be excluded from the project. Many of these factors contributed to the relative sample size for the project. New strategies to engage the staff nurses in implementation would be needed for any future quality improvement projects.

Another limitation is associated with the nature of the surveys. The PSEA survey asked participants to self-report their level of education on a variety of stroke-related topics, rather than an actual synthesized evaluation of education learned. This type of assessment offered patients' perspectives on their level of education, which is important. However, it is possible that if the patients'/caregivers' knowledge on specific topics (i.e. warning signs of stroke) was evaluated in a different way, results could be different. In addition, if the PSEA surveys were given on admission and the respondents would have more time to complete/reflect on the topics, the answers may have been different as well.

Potential for Sustainability

This project idea came from the CCU APRN, physical therapy department heads, and occupational therapy department heads who are planning to develop a stroke education class for patients and families in the community. The Project Director, along with CCU APRN and DNP Project Committee, decided to start this endeavor with an education needs assessment of the

current inpatient stroke education to identify potential teaching points for the community-based stroke education classes. The education needs assessment provided valuable data on the topics that stroke patients have a firm grasp on and the topics that need more emphasis. Potential for sustainability of this project is high due to the future plans of developing a regular stroke education class for community members. Because the education needs assessment determined that there are changes that need to be implemented to the inpatient stroke education process, then the PSEA survey can be adapted and re-administered as needed. The PSEA Survey could also be administered to patients and/or caregivers prior to and immediately following the future stroke education classes to evaluate the effectiveness of education in that setting.

Conclusion

Evaluation of the content, delivery, and timing of education given to hospitalized stroke patients prior to their discharge into the community setting provided valuable information regarding the effectiveness of inpatient stroke education. In the meantime, the project findings will facilitate the development of a community-based stroke education class. In this quality improvement project, the Post Stroke Education Assessment surveys were utilized to obtain the perspectives from patients and/or their caregivers regarding the stroke-related education received during hospitalization. The data from these surveys highlighted areas of strength as well as areas in need of improvement by the hospital's stroke care team. Utilizing the identified strengths, weaknesses, and gaps can help this hospital and DNP prepared nurses in general provide high-quality stroke education that aims to improve patient quality of life.

References

- Agency for Healthcare Research and Quality (2015). Health literacy universal precautions toolkit, 2nd Edition. Retrieved from <https://www.ahrq.gov/health-literacy/quality-resources/tools/literacy-toolkit/healthlittoolkit2-tool2b.html>
- American Stroke Association (2020). American stroke association: A division of the American Heart Association. Retrieved from <https://www.stroke.org/>
- Andrew, N. E., Busingye, D., Lannin, N. A., Kilkenny, M. F., & Cadilhac, D. A. (2018). The quality of discharge care planning in acute stroke care: Influencing factors and association with postdischarge outcomes. *Journal of Stroke & Cerebrovascular Diseases*, 27, 583–590. doi:10.1016/j.jstrokecerebrovasdis.2017.09.043
- Bonnel, W. E., & Smith, K. V. (2018). Proposal writing for clinical nursing and DNP projects (2nd ed.). New York, NY: Springer Publishing Company.
- Bushnell, C., Arnan, M., & Han, S. (2014). A new model for secondary prevention of stroke: Transition coaching for stroke. *Frontiers in Neurology*, 5(219), 1-6. doi:10.3389/fneur.2014.00219
- Bushnell, C. D., Duncan, P. W., Lycan, S. L., Condon, C. N., Pastva, A. M., Lutz, B. J., ... Lundy, L. G. (2018). A person-centered approach to poststroke care: The comprehensive post-acute stroke services model. *Journal of the American Geriatrics Society*, 66, 1025–1030. doi: 10.1111/jgs.15322
- Cameron, V. (2013). Best practices for stroke patient and family education in the acute care setting: A literature review. *MEDSURG Nursing*, 22(1), 51–55.
- Centers for Disease Control and Prevention (2020). Stroke. Retrieved from <https://www.cdc.gov/stroke/facts.htm>

Centers for Medicare and Medicaid Services. (n.d.). Retrieved from <https://www.cms.gov/>

Demarco, J., Nystrom, M., & Salvatore, K. (2011). The importance of patient education throughout the continuum of health care. *Journal of Consumer Health On the Internet*, 15(1), 22–31. doi: 10.1080/15398285.2011.547069

Danzl, M. M., Harrison, A., Hunter, E. G., Kuperstein, J., Sylvia, V., Maddy, K., & Campbell, S. (2016). “A lot of things passed me by”: Rural stroke survivors’ and caregivers’ experience of receiving education from health care providers. *Journal of Rural Health*, 32(1), 13–24. doi:10.1111/jrh.12124

Department of Health and Human Services (n.d.). Health Literacy. Retrieved from <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/health-literacy>

Erdur, H., Scheitz, J. F., Ebinger, M., Rocco, A., Grittner, U., Meisel, A., ... Nolte, C. H. (2015). In-hospital stroke recurrence and stroke after transient ischemic attack: Frequency and risk factors. *Stroke*, 46, 1031–1037. Doi: 10.1161/STROKEAHA.114.006886

Knowles, M. (n.d.). Informal adult education, self-direction and andragogy. Retrieved from <http://infed.org/mobi/malcolm-knowles-informal-adult-education-self-direction-and-andragogy/>

Merriam-Webster (n.d.). Retrieved from <https://www.merriam-webster.com/>

Nickles, A., Fiedler, J., Roberts, S., Lyon-Callo, S., Hurst, R., & Reeves, M. (2013). Compliance with the stroke education performance measure in the Michigan Paul Coverdell National Acute Stroke Registry. *Stroke*, 44, 1459–1462. doi: 10.1161/STROKEAHA.111.000763

Olathe Health (n.d.). Stroke care. Retrieved from <http://www.olathehealth.org/>

Omori, T., Kawagoe, M., Moriyama, M., Yasuda, T., Ito, Y., Hyakuta, ... Matsumoto, M.

- (2015). Multifactorial analysis of factors affecting recurrence of stroke in Japan. *Asia-Pacific Journal of Public Health*, 27(2), NP333-340. doi: 10.1177/1010539512441821
- Powers, W. J., Rabinstein, A. A., Ackerson, T., Adeoye, O. M., Bambakidis, N. C., Becker, K., ... Tirschwell, D. L. (2019). Guidelines for the early management of patients with acute ischemic stroke: 2019 update to the 2018 guidelines for the early management of acute ischemic stroke. *Stroke*, 50(12), e344-e418. doi: 10.1161/STR.0000000000000211
- Sacco, R. L., Wolf, P. A., Kannel, W. B., & McNamara, P. M. (1982). Survival and recurrence following stroke: The Framingham study. *Stroke*, 13, 290-295.
- Toms, K. (2011). Care of the patient with stroke or TIA. [Unpublished internal document, Olathe Medical Center]. Revised May 2018.
- U.S. Census Bureau (2018). QuickFacts: Olathe city, Kansas. Retrieved from <https://www.census.gov/quickfacts/olathecitykansas>

Table 1***Characteristics of Project Participants (n = 10)***

Demographic Variables		n (%)
Age	18-39 years	1 (10%)
	40-49 years	1 (10%)
	50-59 years	1 (10%)
	60-69 years	0 (0%)
	70-79 years	4 (40%)
	80-89 years	3 (30%)
	90+ years	0 (0%)
Race/Ethnicity	Caucasian/White	10 (100%)
	African American	0 (0%)
	Hispanic/Latino	0 (0%)
	Asian	0 (0%)
	American Indian/Pacific Islander	0 (0%)
	Other	0 (0%)
Gender	Male	6 (60%)
	Female	4 (40%)
	Other	0 (0%)

Table 2***Post-Stroke Education Assessment Survey Results***

Questions	Responses (n = 10)				
	Yes		No		
1. Did you receive a stroke folder upon admission to the hospital?	5 (50%)		5 (50%)		
2. What education delivery methods did the healthcare team (nurses, physicians, specialists) use to provide stroke- related health education?	Verbal education	Written education	Visual/video education	Other	
	9 (90%)	5 (50%)	0 (0%)	(0%)	
3. Did the healthcare team (nurses, physicians, specialists) ask if you were ready to learn before discussing health information?	Yes		No		
	5 (50%)		5 (50%)		
4. How often did you receive stroke-related health education by the healthcare team (nurses, physicians, specialists)?	Once on admission	Once per day or less	Once per shift/ twice per day	At every opportunity	Once on discharge
	2 (20%)	4 (40%)	2 (20%)	2 (20%)	0 (0%)
5. Level of education you have received on the following education topics	0-No education/ I didn't know that this topic should be a concern	1-Little education/ Still having concerns about this topic	2-Moderate education / Understanding this topic pretty well	3-Sufficient education / Feeling confident in managing this aspect of my health	
a. What a stroke is and how it affects the body	3 (30%)	1 (10%)	4 (40%)	2 (20%)	
b. What causes a stroke and what risk factors I had for a stroke	2 (20%)	4 (40%)	2 (20%)	2 (20%)	
c. What residual deficits I will experience from my stroke	4 (40%)	2 (20%)	2 (20%)	2 (20%)	
d. What is my prognosis with and without my prescribed treatments	2 (20%)	4 (40%)	2 (20%)	2 (20%)	
e. What I can do to speed up my recovery and maintain my current level of mobility	2 (20%)	4 (40%)	2 (20%)	2 (20%)	
f. What other complications I am at risk for after my stroke	3 (30%)	3 (30%)	3 (30%)	1 (10%)	
g. The warning signs/symptoms of stroke	4 (40%)	2 (20%)	2 (20%)	2 (20%)	
h. How stroke will affect my psychological and emotional health	6 (60%)	2 (20%)	1 (10%)	1 (10%)	
i. How stroke will affect my family unit and role expectations	4 (40%)	2 (20%)	2 (20%)	2 (20%)	
j. What I should do if I think I am having another stroke	1 (10%)	4 (40%)	1 (10%)	4 (40%)	

k. Which providers I should follow up with and how often	3 (30%)	3 (30%)	2 (20%)	2 (20%)
l. Which medications to take and how to take them	2 (20%)	3 (30%)	3 (30%)	2 (20%)
m. What local resources are available to help me	3 (30%)	3 (30%)	3 (30%)	1 (10%)

Table 3*Additional Education Topics Identified by Participants*

Theme Identified	Number of Participants Identifying Theme
None	6
Memory trouble post stroke	2
Depression post stroke	1
Typical progression back to normal	1
Prevention of recurrent stroke	1
Medication instructions	1

Appendix A Post Stroke Education Assessment Survey

This survey is a part of a quality improvement project that aims to assess the stroke education process at Olathe Medical Center and identify areas for improvement. The findings of this project will be used to make recommendations on potential education topics for development of community-based stroke education classes. Participation in this survey is completely voluntary and anonymous. No identifying information will be collected. This survey will take about 10-15 minutes to complete. Please return completed surveys to your nurse prior to discharge. If you have any questions or concerns about this survey, please ask your nurse or Lenzi Kaub via email at lsudduth@kumc.edu. We thank you for your time and participation.

1. Did you receive a stroke education folder upon admission to the hospital? Circle one.
 - a. Yes
 - b. No

2. What education delivery methods did the healthcare team (nurses, physicians, specialists) use to provide stroke- related health education? Circle all that apply.
 - a. Verbal education (they talked to me)
 - b. Written education (they provided printed handouts)
 - c. Visual/video education (they showed me videos)
 - d. Other (please list) _____

3. Did the healthcare team (nurses, physicians, specialists) ask if you were ready to learn before discussing health information?
 - a. Yes
 - b. No

4. How often did you receive stroke-related health education by the healthcare team (nurses, physicians, specialists)? Select one.
 - a. Once on admission to the hospital
 - b. Once per day or less
 - c. Once per shift/twice per day
 - d. At every opportunity
 - e. Once on discharge from the hospital

5. For each row (items a-m) please circle the level of education you have received according to the scale below (0-3). If any of the topics do not apply to you, please leave it blank. Please circle only one number per row.

0 – No education/I didn't know that this topic should be a concern

1 – Little education/Still having concerns about this topic

2 – Moderate education/Understanding this topic pretty well

3 – Sufficient education/Feeling confident in managing this aspect of my health

Education Topics	Ratings			
a. What a stroke is and how it affects the body	0	1	2	3
b. What causes a stroke and what risk factors I had for a stroke	0	1	2	3
c. What residual deficits I will experience from my stroke	0	1	2	3
d. What is my prognosis with and without my prescribed treatments	0	1	2	3
e. What I can do to speed up my recovery and maintain my current level of mobility	0	1	2	3
f. What other complications I am at risk for after my stroke	0	1	2	3
g. The warning signs/symptoms of stroke	0	1	2	3
h. How stroke will affect my psychological and emotional health	0	1	2	3
i. How stroke will affect my family unit and role expectations	0	1	2	3
j. What I should do if I think I am having another stroke	0	1	2	3
k. Which providers I should follow up with and how often	0	1	2	3
l. Which medications to take and how to take them	0	1	2	3
m. What local resources are available to help me (examples: financial resources, transportation, respite care for caregivers, home health services, support groups, websites for additional education)	0	1	2	3

6. What education topics related to stroke would you like to learn more about?

7. What is your age (or age of patient if you are a caregiver)? Circle one.

- | | |
|----------|----------|
| a. 18-39 | e. 70-79 |
| b. 40-49 | f. 80-89 |
| c. 50-59 | g. 90+ |
| d. 60-69 | |

8. What is your race/ethnicity (or race/ethnicity of patient if you are a caregiver)? Circle all that apply.

- | | |
|---------------------|-------------------------------------|
| a. Caucasian/White | d. Asian |
| b. African American | e. American Indian/Pacific Islander |
| c. Hispanic/Latino | f. Other race. Please specify _____ |

9. What is your gender (or gender of patient if you are a caregiver)? Circle one.
- a. Male
 - b. Female
 - c. Other
10. Please identify your relationship to the patient.
- a. I am the patient
 - b. Spouse of patient
 - c. Child of patient
 - d. Family member of patient
 - e. Friend of patient
 - f. Caregiver of patient
 - g. Other (please list) _____

Note: This tool was adapted by the Project Director based on a synthesis of evidence-based literature reviews all of which focused on stroke education (Andrew et al., 2018; ASA, 2020; Bushnell et al., 2014; Bushnell et al., 2018; Cameron, 2013; Danzl et al., 2016; Nickles et al., 2013).

Appendix B



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P: 913-791-4200
olathehealth.org

May 5, 2020

Mrs. Lenzi Kaub
621 Stone Creek Dr
Gardner, KS 66030
(913) 787-0363
lsudduth@kumc.edu

The Olathe Health System Quality Review and Research Committee is pleased to support your project entitled "Evaluation of the effectiveness of inpatient stroke education for the transition from hospital to primary care offices: An education needs assessment." This approval is contingent upon you providing to us the IRB approval of your proposed project, including approval for any applicable forms, consents, or authorizations.

We understand that the goals of this project are to optimize the stroke education process at Olathe Medical Center in order to promote a smooth transition of care into the community to improve the quality of life of patients. This aligns well with our mission statement of helping patients through healing, health, and happiness. They also align with our vision statement which states that we, at Olathe Health, are committed to being the premier healthcare provider throughout the communities we serve. Creation and implementation of a community stroke education class first begins with identifying areas in which we do well and areas in which need improvement.

It is our pleasure to support your project to be conducted at Olathe Medical Center. As the Project Director, as well as an employee of Olathe Medical Center, you will have access to patient electronic health records to screen for eligible patients for the project. The staff RNs working on the 3 North inpatient unit will assist on survey administration and collection after you provide training to them. We look forward to collaborating with you on this project and your presentation of the project's findings!

Sincerely,

Cathy Wiens,

Chief Compliance Officer and Committee Chairperson

Olathe Health Quality Review and Research Committee