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# Nursing Education Intervention on Using Video-Based Patient Education "Modifiable Stroke Risk Factors"

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# Nursing Education Intervention on Using Video-Based Patient Education "Modifiable Stroke Risk Factors"

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**Abstract**

*Objective:* Nurses play a significant role in the discharge education and understanding of the disease state to stroke patients. This study aimed to educate nurses on implementing video-based stroke patient education, focusing on individualized patient modifiable risk factors.

*Methods:* This project included education sessions focused on training nurses to access and use available video-based stroke education. In addition, nurses participated in a needs and knowledge-based survey. These education sessions were provided during staff huddles on different shifts over one week.

*Results:* Education sessions focused on the proper use of the video-based stroke patient education tool positively influenced nursing opinions regarding utilizing the tool.

*Conclusion:* Video-based stroke patient education may meet the needs of providing individualized modifiable risk factor education to stroke patients. Consideration must be given to the current healthcare environment surrounding nurse staffing and how technology can benefit patient education.

*Practice Implications:* Before initiating the project, technology security, availability, and access should be considered.

*Key Words:* patient education, stroke risk factors, stroke education, video-based education

## Introduction

The effects of stroke are far-reaching and impact the lives of the stroke patient and the family and caregivers. Primary prevention is crucial since greater than 76% of strokes are first events (American Heart Association, Inc. [AHA], 2014). Understanding stroke risk factors and affected populations are vital to stroke prevention. Ten potentially modifiable risk factors account for 90% of the risk of stroke (AHA, 2014). Assessing for and educating patients regarding stroke risk factors is vital to ensure stroke-prone individuals are targeted with effective interventions (see Table 1).

**Table 1**

*Modifiable Stroke Risk Factors*

| **Modifiable Stroke Risk Factors** | |
|---|---|
| Hypertension | Cigarette Smoking |
| Obesity and Body Fat Distribution | Diet and Nutrition |
| Physical inactivity | Diabetes Mellitus |
| Alcohol Intake | Psychosocial Factors |
| Cardiac Causes | Apolipoprotein B to A1 |

*Note: This information is adapted from (American Heart Association, Inc., 2014)*

### *1.1 Stroke and Treatment*

Stroke is the fifth leading cause of death and the leading cause of long-term disability in the United States. Recent trends in mortality show that stroke mortality may be rising again after decreasing over the last two decades (Boehme et al., 2017). Strokes are categorized into two main categories; ischemic and hemorrhagic. Each category has further subtypes; however, the risk factors for each of the two main categories are similar. Reducing stroke burden requires identifying modifiable risk factors and demonstrating the effectiveness of risk reduction efforts (Boehme et al.,

2017). Furthermore, Denny et al. (2017) reported that "up to 80% of vascular events after a stroke may be prevented by modifying vascular risk factors through medical and behavioral interventions" (p.30). The awareness of stroke treatment and urgent hospitalization is another community health concern related to stroke treatment. The lack of understanding of stroke treatment and the need for urgent hospitalization may contribute to the delay in patients seeking care (Faiz et al., 2018).

### *1.2 Barriers to Effective Patient Education*

A variety of potential obstacles exist in the healthcare setting for both nurses and learners. Nurses are tasked with various responsibilities throughout their shifts, including providing patient education and other clinical tasks. A multitude of barriers interferes with nurses' ability to fulfill their roles as educators, according to Bastable (2019). The most significant barrier noted by many nurses includes lack of time. Nurses are divided among competing tasks and responsibilities and must be creative and thoughtful on how and when they provide instruction to patients. As patients are often discharging or being admitted at different times in the inpatient setting, the ability to juggle assigned tasks and responsibilities becomes even more difficult. The ability to assess the learner and use appropriate teaching styles and materials becomes extremely difficult due to time constraints throughout a shift or even hospital stays for patients. Discharge planning is essential and plays a crucial role in ensuring timely education and continuity of care.

Another barrier to effective patient education includes prioritizing education for patients and staff from an organizational point of view. According to Bastable (2019), the strong emphasis from The Joint Commission mandates has increased the level of attention given to patient education. However, budget constraints remain a barrier when

attempting innovative and time-saving teaching strategies and tools. Nursing services, including patient education, are not reimbursable by insurance in the inpatient setting, and nursing care is absorbed under hospital room costs. Therefore, there is a lack of monetary influence on the benefits of patient education.

The environment also can hinder effective patient education. While an interdisciplinary approach is desired, it can often make patient education more challenging to complete. Frequent interruptions in care from other clinical staff, testing, or treatments contribute to the difficulty in providing thorough patient education. Lack of privacy and noise also negatively affect nurses' ability to interact with learners effectively.

*1.3 Video-Based Teaching Innovations*

Before discharge, the use of multimedia educational tools has been shown to increase patient knowledge. Specifically, video-based patient education has been shown to provide a meaningful learning experience for illiterate or low health literacy level patients and caregivers (Al Owaifeer et al., 2018). Denny et al. (2017) found that implementing a stroke education video increased patients' stroke knowledge and recognition of symptoms score compared to the pre-video score. Additionally, satisfaction with stroke education increased following the implementation of the stroke education video (Denny et al., 2017). Using video education in tandem with verbal and handouts has also enhanced patient health literacy surrounding knowledge and understanding of post-stroke discharge care (Abu Abed et al., 2014).

## 2. Methods

### *2.1 Setting and Participants*

This project took place at a large academic medical center in the southeastern United States. Participants included registered nurses on an oncology-neurology inpatient unit. The inclusion criterion was employed as a registered nurse on this specific inpatient unit. Exclusion criteria were employed in any job role other than a registered nurse, registered nurse employment on any unit full time other than the inpatient neurology-oncology unit, and registered nurses from the neurology-oncology unit that were not available for training on the video-based patient education. Ethical standards were addressed, and IRB approval was received from the academic medical center.

### *2.1 Stakeholders*

A variety of stakeholders were needed for this project. The stakeholders included nursing administration, nursing leadership of the unit, clinical nurse specialists assigned to the unit, providers, patients, and all involved in enhancing multidisciplinary approach to care.

### *2.3 Need for Innovating Stroke Education*

While individualized stroke risk factor education policies are in place, a recent facility review of patient teaching data revealed this education was only documented as being delivered by nurses at a rate of 61%. That meant 49% of patients discharged after a stroke were not receiving individualized education, placing them at greater risk for readmission and reoccurrence of a stroke.

The current electronic health record (EHR) utilizes minimal patient education that nurses only use in a written format. This format does not provide a way to address health literacy and ensure various teaching/learning modes for patients and families. While video-based education is available, it is not used consistently among nursing staff due to a lack of training in accessing and applying the available video-based education. The inability to provide patient education in different formats does not allow patients or caregivers of different health literacy levels to receive patient education appropriately for their learning style or individualized learning needs. Denny et al. (2017) stated that patients' knowledge of stroke symptoms and risk factors remained limited even after suffering a stroke.

Video-based education can be utilized to improve transitions to the home environment through specific education and patient engagement. Nurses are instrumental in improving patient engagement and mutual decision-making in a patients' healthcare journey. Providing appropriate teaching methods and instruction can improve patient outcomes, according to Bastable (2019). Innovative strategies for patient education, such as video-based education or utilization of tablets and other devices, have improved patient engagement and health literacy by providing a different means of education other than written patient education.

The purpose of this project was to educate nurses on the implementation of video-based stroke patient education. The video-based stroke education was focused on individualized modifiable risk factors. The project evaluated the consistent use of video-based education and nursing confidence in providing patient-specific education.

### *2.4 Theoretical Framework*

This was a quality improvement project that utilized the underpinnings of Swanson's Theory of Caring. This framework was appropriate because the institution uses this framework as their Professional Practice Model. Swanson's Theory of caring also utilizes a holistic approach to meet the patient's needs physically, emotionally, and spiritually. As Wei et al. (2018) discuss, the five caring processes outlined in Swanson's Theory of Caring are required of providers to care for patients appropriately. As providers, nurses, and all healthcare staff care for patients, the processes of Knowing, Being with, Doing for, Enabling, and Maintaining belief are integrated into the care provided.

Video-based patient education is just one way in which nurses can integrate these processes into their care. As nurses try to understand patient and family needs and questions once they are home, help patients and families make informed decisions and guide them through different care decisions, as well as support patients and families through the difficult circumstances of having a stroke or caring for someone who has suffered a stroke they are practicing Swanson's Theory of Caring.

Just as Swanson's research was based on a significant life-changing medical event, stroke can often change one's life suddenly and changes the lives of those who care for the individual. Caring as a nurse has a significant impact on the individual's recovery in the hospital and post-discharge. Ensuring that the patient and family members have needed instructions, tools, education and have made informed decisions during their hospital stay is a vital component of nursing care and incorporates Swanson's Theory of Caring.

*2.5. Implementation Steps*

This project included education session presentations developed by the primary investigator, focused on nurse training concerning how to access and use currently available video-based stroke education, and an overview of the voluntary pre-and post-survey "*Patient Stroke Education Nurse Feedback"* via a Qualtrics link. The nurse education session presentations were provided during staff huddles on different shifts over one week.

These presentations included the following information:

- Rationale for project
- Review Patient Stroke Education Nurse Feedback Pre-Survey results
- Review current process for patient education, including the plan of care
- Review "Understanding my Stroke" patient information cards
- Explain the process to utilize iPad to access Healthwise patient education
- Explain the process to utilize personal patient, family, or caregiver devices
- Discussion of overall use of video-based patient education
- Review of hot topics related to video-based patient education .
- Presentation of audits related to the utilization of specific video-based patient education that will be measured.
- Opportunities to ask questions during and after the education.

Nursing staff learned two methods to educate patients using video-based stroke patient education. Both methods incorporate the use of existing "Understanding my Stroke-Ischemic Stroke" or "Understanding my Stroke – Hemorrhagic Stroke" information cards. The second process taught nursing staff to educate patients via video-

based patient education utilizing the nursing unit-provided iPad. Nursing staff will educate patients via video-based patient education utilizing the patient, family, or caregiver device by applying these processes.

*2.6 Survey Tool*

Staff who participated in the educational intervention were asked to voluntarily participate in pre and post-surveys via email from their nurse manager. The *primary investigator developed the Patient Stroke Education Nurse Feedback survey* and consisted of 11 items utilizing the Likert Scale rankings of 1 (*Strongly Disagree)* to 5 (*Strongly Agree)*. The survey was reviewed by four experts with doctoral degrees in nursing and education to account for validity. The survey also included one open-ended narrative question surrounding education needs, suggestions, and new learning, one selects all that apply question, and one sliding scale question asking the number of times the video-based stroke education has been used by the individual completing the survey. Survey data was collected via a Qualtrics platform. Survey questions are included in Appendix A below.

*2.7 Survey Analysis*

To measure the impact of the education intervention, nurses participated in both the pre-and post-survey. Data was collected and measured in an aggregate manner for both surveys using descriptive statistics (frequency, mean, SD). (See Appendix A for survey results).

## 3. Results

A total of 37 registered nurses received training on how to use the stroke video-based education. In total, 6 (16%) pre-surveys were completed, and 10 (27%) post-

surveys were completed by nursing staff that received the education. Descriptive statistics were used to measure the mean score of participant responses to the pre and post-education *Patient Stroke Education Nurse Feedback survey*.

The item with the highest score in the pre-education Survey was Question 6, with a mean score of 4.1667 (sd=.41), which examined nurse feelings of competency in utilizing the current stroke risk factor patient education materials and providing individualized patient education. The same item was also one of two questions that scored highest at 4.5 (sd= 0.52) in the post-education survey. Question 2, which measured nurses' perception of having appropriate teaching materials on stroke risk factors in their workplace, scored 4.5 (sd=0.70) on the post-education survey. The lowest scored item on the pre-education survey was Question 8, which examined nurses' perception of having adequate time to provide meaningful patient education on stroke risk factors with a mean score of 2.33 (sd=1.37). The same question also scored lowest on the post-education survey, with a mean score of 3.2 (sd=1.13). Question 7 noted the most considerable increase, which measured the nurse's ability to provide additional education beyond what is listed on the pre-selected education checkboxes in the electronic health record.

The pre-education survey questions' mean score results were 3.5091, and the mean score results of the post-education Patient Stroke Education Nurse Feedback Survey's mean score results were 3.9545. The pre-education mean in Question 12, which examined the number of times the nurse utilized video-based stroke patient education in the last two weeks, was 0. The post-education survey mean was 0.333, with the range of utilization equaling 0-2. The majority of those that completed the post-survey stated in Question 13 that they used "other" to provide video-based stroke patient education. The

other was chosen twice in the pre-education survey, although the staff had not been educated regarding the process. A patient or visitor-provided smartphone to provide video-based education was also a popular response. There were no responses that selected hospital-based iPad as the chosen option to provide video-based stroke patient education.

Overall, the use of video-based stroke patient education was beneficial to the nurse. There was a positive influence in questions 1-11 of the Patient Stroke Education Nurse Feedback Survey when comparing the pre and post-education surveys. Staff increased utilization over two weeks from 0 to a mean of 0.3333 times and a range of 0-2 times during the two weeks. Staff commented that the electronic health record might need to be updated to include more current and specific risk factors for stroke, including vaping. There was also concern listed in question 14 responses about educating patients regarding non-modifiable risk factors such as age. Survey results are included in Table 3 of Appendix A.

## 4. Discussion and Conclusion

### *4.1 Discussion*

This quality improvement project focused only on the nurses practicing in the neuro-oncology unit and assessed for a small test to change to evaluate the need for impact and the potential of a larger educational roll-out. The larger number of post-survey participants may be related to increased stakeholder buy-in and promotion of meaningful safety education. The goal of this project was to educate nurses on the implementation of video-based stroke patient education, focusing on individualized modifiable risk factors and evaluating their satisfaction with the video-based stroke

patient education. A variety of factors contribute to nursing satisfaction with patient education tools and portals. Congruent with the literature, time was a significant obstacle when providing patient education, both pre and post the implementation of the video-based patient education.

*4.2 Limitations and Conclusion*

Limitations to this project included implementing a new patient education resource during a global pandemic, limited availability of electronic resources to provide the video-based education, limited accessibility to hospital-supplied electronic resources, inability to configure those resources, and stakeholder buy-in during times of uncertainty. A significant influx of medical patients to an Oncology-Neurology nursing unit during the COVID-19 pandemic decreased the number of available patients to provide stroke risk factor education. Nationwide, there was a decrease in overall stroke patient admissions during the COVID-19 pandemic. As the video-based patient education was being introduced, the second wave of COVID-19 embarked upon the area. The COVID-19 pandemic influenced the patient population and census and nursing staff availability and investment in new endeavors during a pandemic.

Although the hospital could purchase and supply multiple iPads for various needs on the nursing unit, secure storage and charging of the devices continued to be a concern allowing for only 2-3 devices to be charged at a given time. Technology security also was a factor that potentially influenced the utilization of hospital-provided iPads. The process to access the videos on the hospital-provided iPads was longer due to the multiple steps needed to access the videos. The technology department would not allow activation of the camera in order to scan the QR codes associated with the selected videos and

current patient education materials. Scanning the QR codes was a simple process used on personal devices; however, the iPad included multiple screens and choices to access the videos. Hospital-provided iPads could also not be configured to allow direct links to the chosen videos from the home screen. The lack of camera access and configuration of the iPads was a barrier to using the hospital-provided iPads.

The COVID-19 pandemic brought about change in patient populations and census and incurred many different staffing challenges. Exposure to COVID-19, active COVID-19 virus, and changes in the nursing workforce nationwide provided distinct challenges when implementing a new process for patient education. Staff was challenged by caring for more acutely ill patients, and a limited number of visitors to provide patient and family education during the hospital stay. Due to uncontrollable factors, stakeholder buy-in was more challenging to achieve, and apprehension with a new project was necessitated due to the impact to the nursing staff amidst high patient census and acuity and low nursing resources and staffing.

### *4.3 Practice Implications*

Stroke risk factor patient education is vital to the prevention of primary and secondary strokes. Modifiable risk factor patient education is a goal outlined by national organizational experts such as the American Heart Association (American Heart Association, 2021) and The Joint Commission (The Joint Commission, 2021), providing strategic ways to improve the health and prevent strokes. Providing patient education through various methods allows learners to participate in different ways to meet their personal learning needs and desires. Technology is a cornerstone of our culture and rapidly gaining popularity in meeting patient education goals.

It is essential to note that many institutional technology departments have specific security policies and procedures that prevent the use of specific tools and applications on hospital-provided devices. The process to alter those policies and procedures can be lengthy, or the process may not be altered at all. Understanding institutional technology security policies and procedures are crucial in developing a new patient education process utilizing technology. Many stroke patients have altered mental status, short-term memory loss, difficulty organizing thoughts, and receptive aphasia, making it more challenging to utilize technology. Family members or caregivers may be able to access the video-based patient education easier than the patient. Providing clear, written instructions for future use post-discharge is extremely important for the patient to understand and remember the process for future use.

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# Appendix A

## Table 2

*Patient Stroke Education Nurse Feedback Survey*

*Answer Choices*= 1 –strongly disagree; 2 – disagree; 3 – neither agree nor disagree; 4 – agree; 5 – strongly agree

| | **Questions** |
|---|---|
| 1. | *I utilize the current stroke teaching materials provided in the electronic health record.* |
| 2. | *There are appropriate teaching materials in my work place on stroke risk factors.* |
| 3. | *Current stroke risk factor educational content is easy for patients to understand.* |
| 4. | *I am comfortable providing and assessing a patient's understanding of current stroke risk factor education based on their health literacy level.* |
| 5. | *Current stroke risk factor education is up to date based on social determinants of health.* |
| 6. | *I feel competent in utilizing the current stroke risk factor patient materials and providing individualized patient education.* |
| 7. | *I provide additional education beyond what is listed in the pre-selected education check boxes in the electronic health record.* |
| 8. | *I have adequate time to provide meaningful patient education on stroke risk factors.* |
| 9. | *I have the ability to utilize different technologies to provide stroke risk factor patient education such as QR codes, tablets, smart phones or computers.* |
| 10. | *I have the ability to accurately teach patients how to access the stroke risk factor video-based patient education to be reviewed once they are discharged from the hospital.* |
| 11. | *I feel the patients gain a better understanding about how to address stroke risk factors following the current patient education.* |
| 12. | *I have utilized video-based stroke patient education on approximately ____ times in the last two weeks.* |
| 13. | *I utilized the following technology to provide video-based stroke patient education (select all that apply)* |
| 14. | *Please list any topics that are not covered in the stroke risk factor patient education materials or any suggestions for future improvements.* |

## Appendix B

**Table 3**

*Patient Stroke Education Nurse Feedback Survey Results*

| | **Q 1** | **Q 2** | **Q 3** | **Q 4** | **Q 5** | **Q 6** | **Q 7** | **Q 8** | **Q 9** | **Q 10** | **Q 11** | **Q 12** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pre-Survey Mean** | *3.333* | *4* | *3.667* | *4.167* | *3.667* | *4.167* | *3* | *2.333* | *3.5* | *3.1667* | *3.6* | *0* |
| **Pre-Survey Range** | *1-5* | *3-5* | *3-4* | *4-5* | *3-4* | *4-5* | *1-4* | *1-4* | *2-4* | *1-4* | *3-4* | *0* |
| **Pre-survey standard deviation** | *1.505* | *0.632* | *0.516* | *0.408* | *0.516* | *.408* | *1.265* | *1.366* | *0.836* | *1.169* | *0.547* | *0* |
| **Post-Survey Mean** | *3.4* | *4.5* | *4.20* | *4.3* | *3.8* | *4.5* | *3.9* | *3.2* | *3.9* | *3.7* | *4.1* | *0.333* |
| **Post-Survey Range** | *1-5* | *3-5* | *4-5* | *3-5* | *3-5* | *4-5* | *2-5* | *1-5* | *2-5* | *2-5* | *3-5* | *0-2* |
| **Post-Survey Standard Deviation** | *1.349* | *0.707* | *0.422* | *0.823* | *0.632* | *0.527* | *0.875* | *1.135* | *1.197* | *0.949* | *0.568* | *0* |
| **Question 13** | Visitor provided smart phone (1); Other (2) Other(5), patient or visitor provided tablet/ipad/computer (1); patient or visitor provided smart phone (2) | | | | | | | | | | | |
| **Question 14** | Pre-Survey – There were no responses to this question in the pre-survey<br>Post – Survey – Answers included 1. Update EHR to include more modifiable risk factors; 2. Should we not provide education regarding non-modifiable risk factors to stroke patients?; 3. Look at adding other | | | | | | | | | | | |

risk factors such as vaping. You are not able to accurately document in EHR as it is set up now if the patient has a vaping history.