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An Intervention to Improve Emergency Room Nurses' Swallow Study Implementation and Documentation

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AN INTERVENTION TO IMPROVE EMERGENCY ROOM NURSES' SWALLOW STUDY
IMPLEMENTATION AND DOCUMENTATION

by

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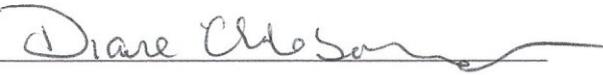
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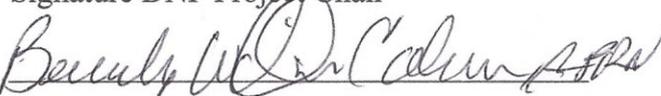
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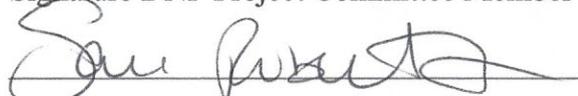
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Thank you to my husband for his continued support and patience during the development and implementation of this quality improvement project. Thank you to my parents for their encouragement and listening ear. Lastly, thank you to Dr. Chlebowy and Dr. Williams Coleman for their continued dedication and valued insight into this project's success.

Dedication

This quality improvement project is dedicated to my grandmother, Martha M. Cook.

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Abstract

Stroke is the 5th leading cause of death when isolated from other cardiovascular diseases in the United States (U.S.) (CDC, 2017). The Centers for Disease and Control (CDC) indicated that 795,000 people have a stroke each year with 65% suffering from some form of dysphagia, or difficulty swallowing. Implementing a simple screening by a trained nurse can detect dysphagia and prevent adverse outcomes, such as aspiration. In the emergency department (ED) of a suburban acute care facility, a pattern of inconsistent Toronto Bedside Swallow Screening Tool (TORBSST) was noted for 24 consecutive months. The purpose of this quality improvement (QI) project was to improve nursing knowledge, implementation, and documentation of the TORBSST prior to by mouth (PO) medication, food, and/or fluid administration. Three 15-minute education sessions followed by daily practice reminders in relation to TORBSST implementation and documentation through shift huddles and flyers were implemented. Baseline nursing knowledge was evaluated with a self-designed assessment administered before and two-months post presentation. No changes in mean knowledge scores were identified. Patient care outcomes data were obtained from the electronic health record for 2-months before and following the intervention. A 100% pre- and post-test accuracy response indicates that knowledge did not impact TORBSST implementation and documentation. Initiation of intentional reminders in conjunction with continual rewarding reinforced expected outcomes and improved TORBSST implementation and documentation. Future implications should include expanded observation and follow up time frames at multiple sites with a larger sample size. Annual nursing education in regard to TORBSST implementation and documentation policy and procedure should be considered for establishment and evaluation.

Key words: quality improvement, QI, stroke, TORBSST, swallow study, dysphagia, emergency

department, ED, aspiration, nursing education, swallow screening.

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Documentation

According to the Centers for Disease and Control (CDC) (2017), 795,000 people have a

stroke each year in the United States (U.S.). This marks stroke as the 5th leading cause of death

when isolated from other cardiovascular diseases (CDC). The population in the U.S. is growing

older, and it is estimated that 72 million people will be 65 years or older by 2030 (CDC).

However, it is a myth that only older adults experience strokes. Strokes can happen to anyone at

any time. This includes children, teenagers, newborns, and even unborn babies. According to the

CDC, in 2009, 34% of patients admitted for stroke were less than 65 years old.

The financial burden and familial obligations after a stroke in young adults can be

significantly more than for older stroke survivors due to the long-term disabilities associated

with strokes. The CDC (2017) also estimated that 33 billion dollars is spent annually in the U.S.

due to healthcare services, hospitalizations, treatment medications, and lost income from missed

work related to the long-term disabilities from stroke.

Background of the Problem

The CDC (2017) reported that the country's highest death rates from strokes are

concentrated in the southeastern U.S. The Center for Health Equity (CHE) (2017) reported that

Healthy People 2020 set a target rate for age-adjusted stroke deaths per 100,000 people at 34.8.

For a specific county in the southeastern U.S. where this project was conducted, between 2011

and 2015 the average annual age-adjusted stroke death rate per 100,000 individuals was 35.54

(CHE). This rate was much lower than previous years; however, data between 2014 and 2016

identified that the age-adjusted stroke death rate was rising and reached 59.6 per 100,000

individuals and continued to climb (CHE).

Mason-Whitehead, Ridgway, and Barton (2013) expressed that with the current medical and technological advances we are now aware that damage from stroke can be limited with early recognition and intervention from health care specialists. Some of the adverse outcomes that can be associated with strokes include difficulty swallowing, speech impairment, and decreased or loss of muscle control. Difficulty swallowing, also called dysphagia, is one adverse outcome that can be detected and prevented. A simple screening implemented by a trained nurse can detect dysphagia. For this quality improvement (QI) project this screening is called the Toronto Bedside Swallow Screening, or TORBSST (ASA, 2016).

For the last three years, the principal investigator (PI) has worked in the emergency department (ED) of a suburban acute care facility as an Assistant Nurse Manager. Due to these alarming statistics, the PI was offered the opportunity to improve patient care outcomes as a stroke champion at this facility. In this role, the PI completed weekly stroke log evaluations. These stroke log evaluations required the PI to review each electronic medical record (EMR) for every stroke patient in the ED. The PI also provided positive reinforcement to the nursing staff along with one-on-one coaching, and patient safety reporting. Positive reinforcement was provided through the facility's electronic reward system where employees could earn points to buy merchandise when all metrics were met. One-on-one coaching and patient safety reporting were initiated when metrics were not met and staff required improvement. When reviewing the patients' EMRs, the PI ensured that the outcome measures were met as set by the Joint Commission for the facility's stroke ready accreditation.

The Joint Commission develops and sets baseline outcome measure statistics. Annually each facility is evaluated on its ability to meet these metrics. The ED reviews three of the set

metrics: (1) door to provider at the bedside; (2) door to stroke provider consultation; and (3) TORBSST implementation (Joint Commission, 2019).

While evaluating the outcome measures, the PI noticed a pattern of inconsistent TORBSST implementation within the facility's ED for a consecutive 24 months. The current standard was to complete a TORBSST screening on greater than or equal to 95% of stroke patients before providing PO (by mouth) medication, food, or fluids. During two months in 2018, the facility's ED only implemented the TORBSST screening 60 to 61% of the time. These dysphagia screening outcomes were concerning because 65% of stroke patients may experience dysphagia (Donovan et al., 2013). If the facility is not screening greater than or equal to 95% of the admitted stroke patients, then these patients were placed at risk for adverse outcomes. Some of the negative outcomes of dysphagia include aspiration pneumonia, dehydration, malnutrition, weight loss, and even death (American Stroke Association, 2016).

Summary of the Evidence

A review of the literature was conducted to provide evidence-based support for this QI project. The studies supporting the proposed QI project varied in strength. Three of the five articles identified (Adelman et al., 2014; Mason-Whitehead, Ridgway, & Barton, 2013; Niemi, McEarlane, & Tillett, 2013) were considered level III evidence according to the Johns Hopkins Evidence Based practice rating scale (Dang & Dearholt, 2017). The level III articles were non-experimental, qualitative, or a meta-synthesis (Adelman et al.; Mason-Whitehead, Ridgway, & Barton; Niemi, McEarlane, & Tillett) (See Table 1). A level IV article could be defined as the opinion of nationally recognized experts or an expert consensus panel (Donovan et al., 2013). Lastly, the final article was rated as level I evidence due to the randomized controlled trial design (Freeland et al., 2016).

Multiple investigators had reported the importance of healthcare providers' role in educating, identifying, and preventing stroke (Adelman et al, 2014). Identifying and preventing stroke can become difficult when obstacles exist. Adelman et al. identified that 10% of strokes occur among hospitalized patients and that nurses tend to be the first to recognize stroke symptoms in this population. Adelman et al. completed a qualitative study that implemented a voluntary online stroke survey to evaluate the knowledge of stroke signs and symptoms among inpatient and ED nursing staff. An 83.8% response rate was obtained from 875 subjects to correctly identify at least two stroke-warning signs. Eighty-seven percent were able to correctly identify, at least two, and 31% identified three. Adelman et al. found that even through stroke knowledge is deemed important, it was not the sole factor in motivating nursing staff to activate emergency responses for stroke.

Donovan et al. (2013) completed a conference proceeding from the International Stroke Conference and indicated that the American Heart and Stroke Association guidelines identify that swallow screening should be conducted before oral intake, including aspirin. It was also noted that swallow screening in stroke patients is critical to prevent adverse outcomes related to aspiration and inadequate nutrition (Donovan et al.).

Freeland et al. (2016) conducted a randomized controlled trial that compared didactic only education swallow screening to education that included the addition of simulation mannequin hands on training. The aim of the study was to evaluate if the use of medical simulation mannequins was feasible for training and evaluating nursing administration of swallow screenings to stroke patients. Freeland et al found that the simulation group actually required fewer screening practice sessions to obtain competency when compared to the control

group. It was also found that the simulation group had an overall better immediate recall of skills learned compared to the control group.

Mason-Whitehead, Ridgway and Barton (2013) completed a mixed-method study to evaluate third year student nurses' knowledge and experience of stroke education. It was identified that student nurses' knowledge of stroke was lacking in regards to foundational aspects of stroke including common symptoms, complications, and risk factors. The study concluded that all nursing students should have experience with patients who have had a stroke and this does not always occur (Mason-Whitehead, Ridgway, & Barton).

Niemi, McErlane, and Tillett (2013) conducted a qualitative study to create a combined facility annual stroke education program for non-clinical staff and nurses. This program was unique in that direct care nurses played an integral role in its development and maintenance. The objectives, content, and delivery method were designed by the direct care nurses for annual competency maintenance above and beyond the Joint Commission Primary Stroke Certification recommendations. Bedside swallow screening was identified as key content. The summary of evidence is provided in Table 2.

Conceptual Framework

Malcolm Knowles was an American educator well known for the term andragogy, which he defined as the art and science of adult learning (Knowles, 1973). In 1984, Knowles developed four assumptions about the characteristics of adult learners and called them the four principles of andragogy and then later added a fifth characteristic. The four characteristics include self-concept, learning experience, readiness to learn, orientation to learning, and motivation to learn. From the characteristics of andragogy came the four principles of andragogy that include

involvement, problem centered concerns, relevance and impact to the learner, and experience (Pappas, 2013; Knowles).

Three of the four principles of andragogy were applied to this QI project. While developing the educational portion of the intervention, it was important to understand that adult learners' experiences, even mistakes, provide a basis for their knowledge and actions. Knowles notes that adult learners are most interested in subjects that have an immediate relevance and/or impact to their job or personal life. Adult learners also focus on problem-oriented concerns rather than content-oriented concerns (Pappas, 2013; Knowles, 1973). These three principles of adult learning were applied to this QI project to educate nurses in the ED.

Setting and Organizational Assessment

Clinical site approval was obtained from the Chief Nursing Officer, as well as the facility's research council. The facility is an ED with a 45 bed capacity within a small suburban acute care hospital in the southeast U.S.. This facility is also certified by the Joint Commission, American Heart Association, and American Stroke Association as an Acute Stroke Ready Hospital. A total of 45 nurses were employed and certified to complete the TORBSST within this department. Quarterly mandatory staff meetings were completed to update employees of changes occurring within the department. Educational updates and sessions took place during these set times.

To adhere to the proposed project process, the three 15-minute presentations were completed across one week at the initial day shift and night shift staff huddle meetings. These presentation times were decided in conjunction with the unit manager to obtain the largest sample size without replication and extraneous cost.

Purpose

The purpose of this QI project was to improve nursing knowledge, implementation, and documentation of the TORBSST swallow screening prior to PO medication, food, and fluid administration.

Intervention

This QI project used a longitudinal pre-test/post-test design. The intervention consisted of a 15-minute nursing education session followed by daily practice reminders in relation to TORBSST screening and documentation through shift huddles and flyers. A five-minute pre-test was administered to obtain baseline-nursing knowledge in the facility's ED immediately before the presentation. Following the pre-test, a 15-minute presentation was presented by the PI to provide knowledge of TORBSST implementation and documentation in the facility ED. All presentations occurred during staffing shift huddles established by the Nurse Manager. Three separate presentations were completed over the course of one week by the PI.

During the two months post presentations, intentional reminders, including flyers posted throughout the ED, were distributed and maintained. Intentional reminders consisted of flyers posted adjacent to each medication pyxis, staff bathroom and break room. Daily huddles also served as intentional reminders. During each shift huddle the unit nursing leadership team announced a scripted reminder designed by the PI at 7am, 11am, 3pm, and 7pm. These times coincide with staffing increases on the unit. Throughout the project's implementation, the standard facility process of positive recognition continued for every TORBSST documented. This took no more than two minutes each.

A logic model has been developed to illustrate the proposed intervention process (See Appendix A).

Participants

Recruitment of nurses (N = 20) occurred within the ED of a suburban acute care facility

in the southeast U.S. The target population consisted of all ED nurses caring for the adult

population with stroke-like symptoms. ED nurses that were working full time, part time, or PRN

employment status and had obtained TORBSST swallow screening certification were included in

the project. Exclusion criteria consisted of nurses with an employment status within a facility's

clinical agency, travel nursing, those caring for pediatric patients, and nurses that had scheduled

leave during the project period.

Data Collection

Two months post presentation data was obtained through chart reviews to obtain outcome

measures. The total number of stroke patients and number of stroke patients with TORBSST

documented were obtained two months before education implementation and two months post

education implementation. Two months post education, a five-minute post-test was administered

to obtain nurses' knowledge of TORBSST implementation and documentation during their

scheduled shifts within the facility ED. Refer to Table 3 for the timeline for data collection.

Measurement

To ensure consistent data collection the PI completed all data collection at baseline (pre-

test) and two months post-baseline (post-test). To ensure human subject safety, this QI project

was submitted and reviewed by the University's Institutional Review Board. To ensure

confidentiality and anonymity of the sample a limited data set was utilized, no sample identifiers

were obtained, and a unique identifier system developed by the PI was implemented. The sample

was not compensated for their participation in this project. Consent was waived as this project

involved minimal to no risk to the participants. The only known risk to participants included the

possible loss of confidentiality. The use of a unique numbered identifier system was utilized to protect participant confidentiality. All data was de-identified with the identifier key log. All data was stored and maintained on an encrypted and password-protected desktop. A hard copy was stored in a locked file cabinet in the facility's nurse manager's office. For data stewardship all facility HIPAA policy and procedures were followed and confidentiality and anonymity were maintained.

The participants were informed that participation in this QI project was voluntary and they were not obligated to complete all components of the project. The participants were also informed that they have the right to decline to answer any questions presented in the pre/post-test and to withdraw from the project at any time.

The TORBSST screening tool was and is the established dysphagia-screening tool utilized at the facility. According to Martino et al. (2009), the TORBSST is a simple and accurate tool that identifies stroke patients with dysphagia regardless of the severity and setting. Martino et al. (2009) reported the TORBSST demonstrated a strong validity with sensitivity at 91.3% (CI, 71.9 to 98.7), and a negative predictive value at 93.3% in the acute setting and 89.5% in the rehabilitation setting.

Results

Demographic Data

Twenty nurses participated in the presentation, pre-test assessment, and post-test assessment. All twenty nurses were rewarded for follow through implementation and documentation of TORBSST via the facility's pre-established electronic reward system. Ninety-five percent (n = 19) of the sample was female, 70% (n = 14) were aged 18 to 35, and 65% (n = 13) had a bachelor's degree in nursing. Out of the total sample (N = 20), 50% (n = 10) have 1-5

years of nursing experience with 30% (n = 6) being at this facility less than one year. Seven out of twenty (35%) have only been in this department for less than one year. Demographic data is further outlined in Table 4.

Outcomes Measures Data

A total of 156 stroke patients were evaluated in the four months while this QI project was implemented. Two months prior to implementation, 94 total stroke patients were evaluated. A total of 67 stroke patients were evaluated in one month. Of those 67 only 58% (n = 39) had a TORBSST implemented and documented prior to any PO medications, food, and/or fluid. Eight stroke patients (12%) did not receive a TORBSST prior to PO medication administration. The following month a total of 27 stroke patients were evaluated. Of the 27, 67% (n = 18) received a TORBSST prior to any PO intake and 33% (n = 9) did not receive a TORBSST.

Two months post intervention implementation a total of 62 stroke patients were evaluated with 58% (n =36) during the first month. Of the 62 patients seen, 81% (n = 29) received a TORBSST prior to PO administration and 19% (n = 7) did not. Even though seven patients did not receive a TORBSST, 0% (n = 0) were given PO medications, food, and/or fluid. During the second month a total of 26 stroke patients were evaluated. Of the 26, 73% (n = 19) received a TORBSST and only 27% (n = 7) did not. Upon further investigation it was noted that 100% (n = 7) did not receive any PO medications, food, and/or fluid. This outcome measures data is reformatted in Appendix B.

<div align="center">

Discussion

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Interpretation

The purpose of this QI project was to improve nursing knowledge, implementation, and documentation of the TORBSST prior to any PO medication, food, and/or fluid administration.

With a 100% correct response collection on the pre- and post-test it can be noted that knowledge did not impact implementation and documentation of the TORBSST (Appendix C). As indicated in the demographic data, 70% (n = 14) of the sample has been in this facility for greater than 1 year. The current facility education plans for TORBSST includes initial certification and a 1-year follow up session. After two years of employment with the facility, there is no follow up education or recertification with TORBSST screening policy and procedure expectations.

It can be noted that with the implementation of intentional reminders and a continual reward program, nurses were more inclined to implement and document a TORBSST. This is indicated by a decrease from 11% (n = 10) of stroke patients given PO medications, food, and/or fluid down to only 2% (n = 1) in a two-month time frame post intervention implementation. Annual education could reinforce the importance of proper implementation and documentation of TORBSST screening.

Limitations

There were limitations to this QI project. It was only conducted within one ED of a small suburban acute care facility with a small sample size (N = 20). The post-test was completed soon after presentation implementation, which could have impacted the sample's responses in that the presentation was still readily available information. The pre- and post-test assessment tool was self-designed and lacked strong variation of content with only three questions in regard to TORBSST policy and procedure, which, again, could impact the samples responses pre- and post-presentation.

Future Implications

Knowles noted that adult learners are most interested in subjects that have an immediate relevance and/or impact to their job or personal life (Pappas, 2013; Knowles, 1973). Future

education and support of swallow screening in the stroke population for this facility should include annual education that impacts nursing at a personal level. Nurses should be educated on how this screening impacts not just the stroke population, but also their job and personal life to establish ownership.

For future practice, a more robust pre- and post-test assessment should be considered. This assessment should include in depth patient scenario examples to determine critical thinking ability, and application strength of policy and procedure in real world situations in relation to TORBSST implementation and documentation. The sample should be expanded to all areas of the facility that care for the stroke population to increase sample size. If annual education is considered for implementation, the QI project should be evaluated for one year or more.

Conclusion

In summary, stroke is the 5th leading cause of death in the U.S. In the U.S., there is an age-adjusted death rate of 59.6 people per 100,000 and increasing (CHE, 2017). Stroke leads to long-term adverse outcomes and costs nearly 33 billion dollars annually due to preventable adverse outcomes (CDC, 2017). With a decrease from 10 patients not receiving TORBSST implementation and documentation prior to PO administration down to one this QI project provides support for the implementation of annual education and intentional reminders. This recommendation hopes to ensure that 95% of the facility's stroke patients obtain adequate screening to prevent identified adverse outcomes.

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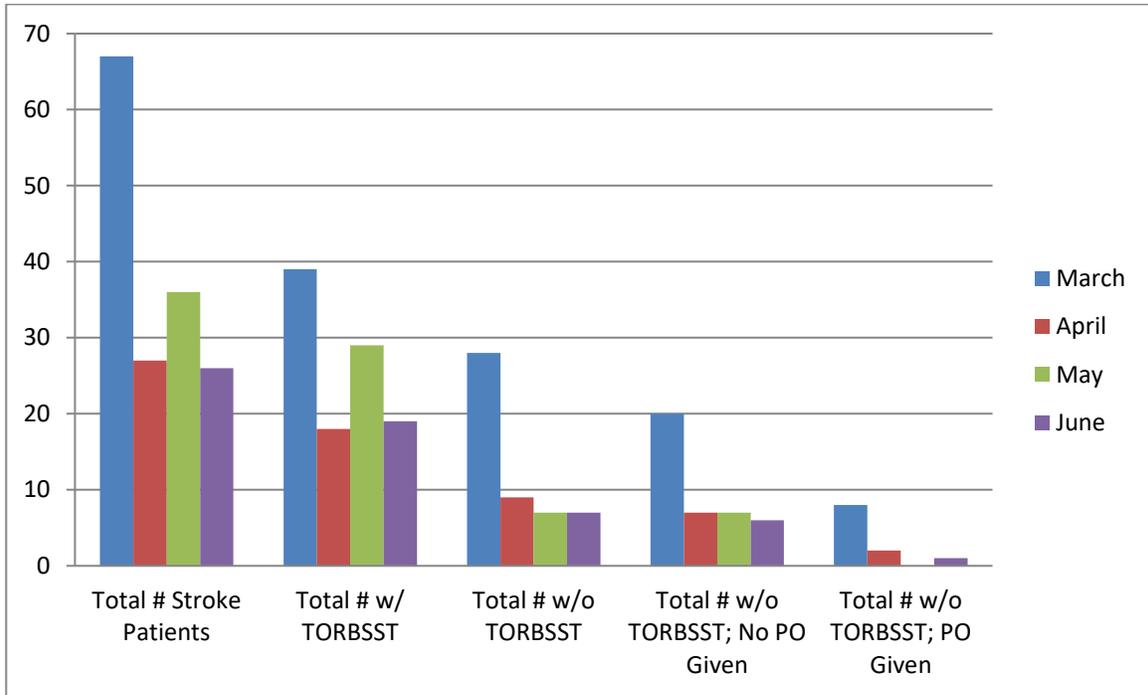
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Appendix A

Logic Model for Improving Swallow Study Implementation and Documentation
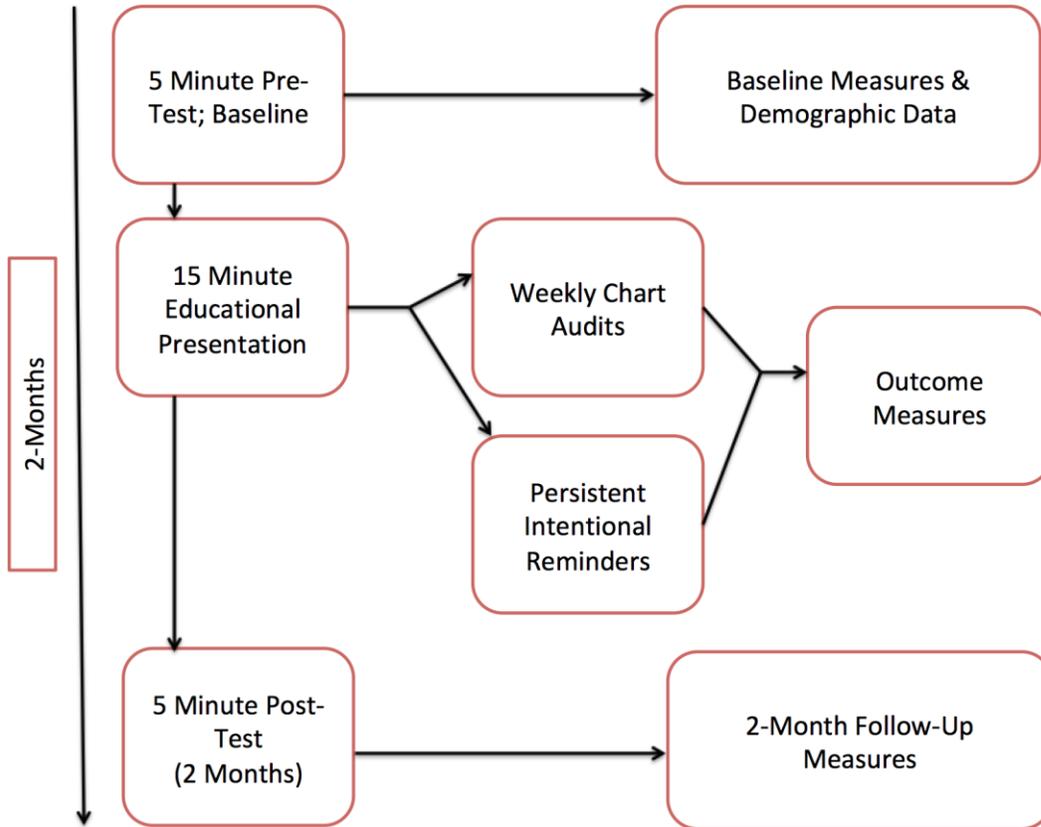
Appendix B

Outcome Measures Data

Appendix C

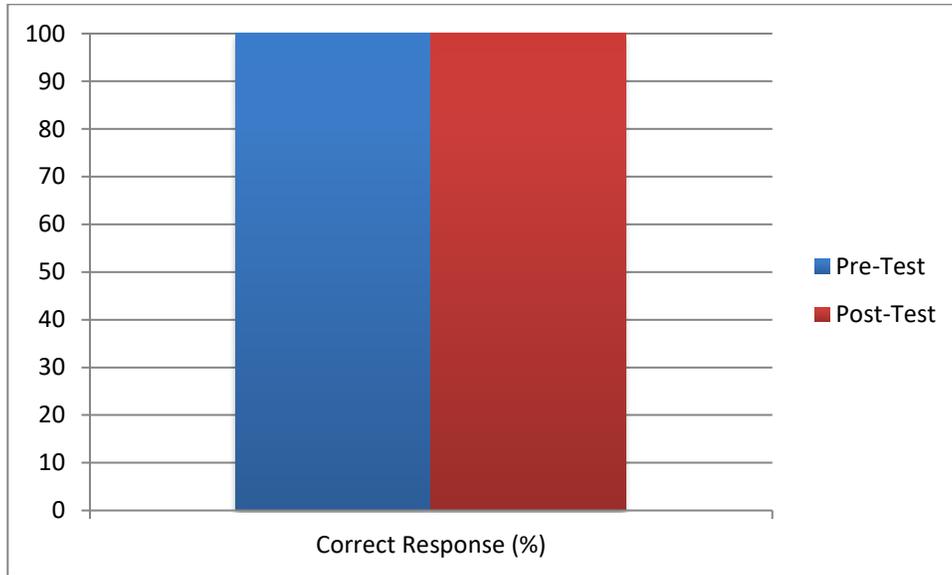Pre- and Post-Test Correct Answer Response

Table 1

The Johns Hopkins Nursing Evidence-Based Practice Rating Scale

Strength of Evidence	Type of Study
Level I	- Experimental study/randomized controlled trial (RCT) or meta analysis of RCT
Level II	- Quasi-experimental study
Level III	- Non-experimental study, qualitative study, or meta-synthesis
Level IV	- Opinion of nationally recognized experts based on research evidence or expert consensus panel (systematic review, clinical practice guidelines)
Level V	- Opinion of individual expert based on non-research evidence. (Includes case studies; literature review; organizational experience e.g., quality improvement and financial data; clinical expertise, or personal experience)

Note. Table adapted from Dang and Dearholt (2017).

Table 2

Evidence Hierarchy for Stroke Recognition

Citation	Level of Evidence	Design/Methods	Findings
Adelman et al., 2014	Level III	- Qualitative study that focused on stroke symptom recognition and response	- 87% identified 2 stroke warning signs - 31% identified 3 stroke warning signs
Donovan et al., 2013	Level IV	- Conference proceeding from International Stroke Conference 2012	- American Heart/Stroke Association indicate swallow screening should be conducted prior to oral intake, including aspirin
Freeland et al., 2016	Level I	- Randomized controlled trial	- Simulation group required one fewer screens to obtain competency - Simulation group displayed better immediate recall of skills learned compared to the didactic group
Mason-Whitehead, Ridgway, & Barton, 2013	Level III	- A mixed method evaluative design - Quantitative and qualitative approaches involved	- Identified that student nurses' knowledge of stroke was lacking in regard to foundational aspects of stroke including common symptoms, complications, and risk factors
Niemi, McErlane, & Tillett, 2013	Level III	- Qualitative study	- Objectives, content, and delivery method were designed by direct care nurses for annual competency maintenance beyond the Joint Commission Primary Stroke Certification Recommendations - Bedside swallow screening was identified as key knowledge content needed

Table 3

Measurement Table for Intervention Outcome Variables

Outcome Variable	Measurement
Baseline Nursing Knowledge	Self Designed Pre- and Post-Test Evaluation
TOR-BSST Documentation & Implementation	Stroke Log Metrics and Chart Review
Nursing Knowledge Post Intervention	Self Designed Pre- and Post-Test Evaluation

Table 4

Demographic Data

Demographic Variable	N (%)
Sex	
Male	1 (5.0)
Female	19 (95.0)
Age (in years)	
18-35	14 (70.0)
36-55	5 (25.0)
55-65	1 (5.0)
65 or older	0 (0.0)
Nursing Experience (in years)	
Less than 1	3 (15.0)
1-5	10 (50.0)
5-10	5 (25.0)
Greater than 10	2 (10.0)
Nursing Degree Level	
LPN	0 (0.0)
Diploma RN	1 (5.0)
RN, ADN	3 (15.0)
RN, BSN	13 (65.0)
Enrolled/Completed Graduate School	3 (15.0)
Years at Facility	
Less than 1	6 (30.0)
1-2	5 (25.0)
3-6	5 (25.0)
6 or more	4 (20.0)
Years in Department	
Less than 1	7 (35.0)
1-2	6 (30.0)
3-6	3 (15.0)
6 or more	4 (20.0)