# Using Video Technology to Increase Emergency Department Nursing Self Confidence

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## Abstract

Purpose: Maintaining self-confidence for an emergency department (ED) nurse can be challenging when performing low frequency high acuity clinical skills. A lack of continuous education to maintain skill retention for infrequently performed ED nursing skills can lead to a decrease in nursing self-confidence.

Methodology: A convenience sample of ED nurses at a Magnet designated facility in Bergen county New Jersey was used to implement a pilot project using a video educational module to increase ED nursing confidence. Participants were evaluated on their level of self-confidence before and after the use of the video module.

Results: It was discovered the participants had an increase of self-confidence when executing infrequently performed ED nursing skills. A paired t-test conducted between the pre- and post-test score provided a statistically significant p value of $< .005$.

Implications for Practice: Developing and sustaining ED nursing self-confidence is essential for providing quality, safe, and effective patient care. This can be achieved using video technology through a step-by-step video instruction of infrequently performed clinical skills.


*Keywords: Emergency nursing education, technology education, e-based learning,* and *nursing confidence.*

# Using Video Technology to Increase Emergency Department Nursing Self Confidence

The Emergency Department (ED) environment is unpredictable, fast paced, and often chaotic. An ED nurse must be able to quickly and promptly evaluate and intervene in the care of a patient. ED nursing entails acquiring a unique set of clinical skills which go beyond stabilizing a patient. According to Fry and MacGregor (2014) there is an expectation that ED nurses master the knowledge of multiple medical problems, co-morbidities, and medical emergencies in an efficient and rapid timeframe. In addition, it is important for the ED nurse to acknowledge the various influences affecting their patients' status including medical complications, social, financial, and economic variables. The ED nurse needs to master sufficient knowledge regarding many medical problems that can affect a patient throughout the entire lifespan. It is important to consider how the ED nurse can be prepared to perform skills that are infrequently performed.

An ED nurse weighs their self-confidence and self-efficacy on the success of their ability to handle necessary tasks and interventions for their patient (Fry & MacGregor, 2014). The uncertainty of what type of medical scenario a patient will present requires the ED nurse to be trained on a variety of skills and interventions. Infrequently performed tasks can create anxiety and negatively impact the ED nurse's performance in a high-risk clinical situation (Munroe et al., 2016). When presented with an infrequently performed skill or intervention the ED nurse may seek validation from peers, hospital policies, or use online sources without validating the reliability of the source of information. The uncertainty of performing this skill combined with the unpredictability of a patient's clinical presentation can leave the ED nurse feeling unprepared, incompetent, and defeated (Fry & MacGregor, 2014). These feelings can contribute to a more probable outcome of failure, increased anxiety, and job or patient dissatisfaction (Fry & MacGregor, 2014).

Currently, there is a lack of a standardized or consistent method, or process, to validate and/or control an ED nurses fear in these moments of uncertainty. This project attempted to change practice in an effort to encourage ED nurses to utilize a video module, through electronic based learning, in order to validate infrequently performed skills to improve their self-confidence and self-efficacy. Self-confidence is defined as influencing the nurse's ability to task appropriately. The more frequently a task is undertaken the more likely the nurse could articulate a greater self-confidence (Fry & MacGregor, 2014).

Self-efficacy is influenced by an individual's self-confidence. Self-efficacy is described as an individual's confidence in their ability to successfully accomplish a given task or activity and motivates the individual to conduct appropriate or correct behavior. Self-efficacy helps determine what activities nurses engage in and the degrees of efforts they have for pursing the task and their resilience to accomplish the task. (Fry & MacGregor, 2014).

## Background & Significance

Anxiety created from having to perform an infrequently executed clinical skill can lead to delays in patient care, and patient dissatisfaction (Munroe et al., 2016). According to Centers for Medicare & Medicaid Services (CMS; 2018), a high-volume acute care hospitals ED sees an average of 60,000 patients per year. Approximately 150-200 patients per day seek care in the ED. In this busy environment, nurses can experience four types of fear which can cause negative patient outcome and poor patient care to be delivered are being perceived as: ignorant, incompetent, negative, and disruptive (Tocco, 2014). These limitations stem from the nurse who fears being perceived as incompetent, ignorant, negative, or disruptive

(Tocco, 2014). These feelings have a direct impact on the nurse's self-confidence and self-efficacy.

**Regulatory Bodies**

Hospital experience and quality of care is important not only for patient outcomes and patient satisfaction but for hospital reimbursement as well (CMS, 2018). This financial component is crucial to be aware of when implementing processes that effect patient care. Hospitals risk losing accreditations that validate their commitment to quality of care such as The Joint Commission (TJC) accreditation and Magnet® recognition if they fail to adhere to efforts to improve patient outcomes (The Joint Commission, 2019a). The Joint Commission (2019a) is a not-for-profit organization which accredits and certifies health care facilities based on criteria that they are providing the safest, highest quality, and superlative care. TJC is responsible for certifying 21,000 various types of health care facilities and organizations (The Joint Commission, 2019a). Accreditation is provided through a survey conducted by TJC employers, every 2-3 years, who review the processes that impact patient care and patient bill of rights. TJC recognizes the inclusion of technology and has begun a program called Pioneers in Quality. The program produces webinars for continuing education unit (CEU) for facilities and their leaders to learn and improve their quality of using healthcare technology (The Joint Commission, 2019b).

Magnet® recognition is considered the gold standard for nursing excellence for health care facilities (American Nurses Credentialing Center, 2019). Receiving Magnet® designation acknowledges the health care system values nursing excellence (American Nurses Credentialing Center, 2019). Magnet® recognition provides nurses with an opportunity to gain independence, improve bedside practice, and gain empowerment throughout their various career stages. Magnet® designation is a distinguished honor as only

8% of hospitals in the United States (US), have been successful at obtaining this designation (American Nurses Credentialing Center, 2019). It is important for hospitals to have this designation because patients recognize Magnet® as a symbol of receiving the best care from nurses who are supported to provide the highest level of care (American Nurses Credentialing Center, 2019). Magnet® facilities encourage education and autonomy in nursing practice. This recognition can support financial growth, increase hospital reimbursements rates, improve nursing job satisfaction and empowerment, increase patient satisfaction, and support positive patient outcomes (Coladonato, 2018).

**Patient Safety & Education**

The World Health Organization (WHO; 2008) has expressed the necessity to provide exceptional quality care for patients throughout the world. The WHO (2008) implemented a patient safety workshop in 2008 calling for health care organizations to create and adhere to standard operating procedures, improve effective communication amongst healthcare professionals, and enforce up to date training and education. Patient safety is at the core of education and training (LeFlore & Thomas, 2016). The WHO (2008) recommends that this type of education should be executed through advanced technology such as electronic (e-learning) such and video or simulation modules. "Education and validation of competency are critical components in the quest to improve patient safety" (WHO, 2008, p. 11). This expectation mirrors the Institute of Medicine's goals for 2020 that 90% of decisions regarding clinical care will be evidence based (Milner, Bradley, & Lampley, 2018). Video modules permit registered nurses (RN) to practice, repeat skills, and increase their confidence

reducing the likelihood of an error to occur and thus saving health care facilities time, money, patient lives, and energy (Leszczynski et al., 2018).

**Medical Errors**

Medical errors go beyond medication prescription orders and medication administration (Kern, 2016). Medical errors can be related to ineffective communication, lack of preparedness from limited education, and simply human error (WHO, 2008). Ineffective communication is responsible for 30% of medical errors (Kern, 2016). The *2015 Malpractice Risks in Communications* discusses ineffective communication amongst the healthcare team members to cause medical errors to occur (Kern, 2016). This type of medical error can cost the health care facility up to $1.7 billion in malpractice costs and potentially taking 2,000 lives (Kern, 2016). A majority of the research surrounding patient safety focuses on medication errors and post-operative complications. Since medical errors encompass many nursing interventions a solution is necessary that can address this complex problem. When providing patient care medical errors are ideally to be avoided as they can create negative outcomes such as lengthen a patient's stay, create distrust within the healthcare system, cause permanent disability, or result in death (Gorgich, Barfroshan, Ghoreishi, & Yaghoobiv, 2016). The total US population in 2016 was 322,180,000 and it is estimated that $9,403 is spent per person on health care expenses; a total of up to $3 billion and 17% of total expenditure on GDP (WHO, 2019b). The large amount of funds spent on health care alone makes interventions to improve quality of care, such as using video educational modules, to improve nursing confidence a priority for healthcare.

**Self-Confidence & Self-Efficacy**

How an individual handles and experiences anxiety or uncomfortable situations is determined through their self-confidence and self-efficacy (Kim, 2018). These perceptions of

oneself go hand in hand and can affect the nurse's performance (Kim, 2018). "Self-efficacy is the confidence in one's ability to organize, judge, and perform the actions necessary to accomplish a given task" (Kim, 2018, pp. 258-259). A nurse's confidence is gained through the conditioning and experience of routine exposure to clinical scenarios (Kim, 2018). Clinical competence has been defined as the ability to perform safe, effective, evidence-based care without supervision (Hassankhani, Hasanzadeh, Powers, Zadeh, & Rajaie, 2018). Over time, as an ED nurse advances from the stages of novice to expert, competency should naturally become a part of their growing professional development and skills (Munroe et al., 2016). It can be challenging to provide and guarantee every ED nurse reaches practice competency due to the fast-paced high acuity environment of the ED.

Learning and gaining clinical experience as a nurse in the ED is challenging due to the continuously changing environment. The patient experiences and clinical situations can be intense and fast moving. The uncertainty of this environment does not guarantee every ED nurse will gain the same opportunities to learn and grow in certain ED skills. There is a small amount of consistency with routinely performed skills such as obtaining intravenous access, administering of medications, and performing patient assessments (Munroe et al., 2016). Other ED skills such as arterial line set up, accessing an implanted subcutaneous Port a Catheter, and Central Venous Pressure monitoring are not as routinely performed. The opportunity to execute these skills may not present itself until the ED nurse is required to perform the clinical situation for the first time placing the nurse and patient at risk.

The ED nurse may understand the theoretical application of the nursing skill and be aware of how to perform the clinical skill but may have never had the chance to actually perform it on a patient until the moment arises. Therefore, the theory of do one, see one, teach one is not a reliable educational method in this type of medical environment (Kim, 2018). Many emergency departments have utilized simulation experiences to increase

exposure of infrequent clinical scenarios to ED nurses. Again, this does not predict when the ED nurse will encounter the clinical scenario in their practice when the skill is needed. Using simulation for clinical re-education is important to address knowledge retention as there is no guarantee of when the skill that is taught will be performed again. A potential solution is for the ED nurse to learn these skills in a simulated environment and rely on an electronic video module to reinforce the clinical skill in the practice environment.

**Educational Training & Technology**

Using technology for skill validation supports an ED nurse's self-efficacy because it assists with promoting their confidence in performing a skill, in which they may not be comfortable performing in real time (Leszczynski et al., 2018). If an ED nurse has not performed a skill, or perceives themselves to not perform a skill well, they may consistently avoid performing this skill and rely on colleagues to perform the task instead (Leszczynski et al., 2018). Using a video module can take the ED nurse through a quick visual step by step instruction at performing the skill. Emergency department nurses have a baseline of the clinical knowledge and critical thinking necessary to perform the skill but may require validation from a consistent expert source. This can be attained through a video module.

Successfully accomplishing a clinical procedure or skill on a patient can create a stronger sense of confidence, achievement, and overall stronger advanced clinical practice in an ED nurse (Fry & MacGregor, 2014). Using video e-learning can also reduce financial costs to a department by eliminating having to hire additional educators, paying for extra staff to cover the unit for other nurses to attend a formal educational day, and removing the need for staff to travel to off-site locations for a class (Emergency Nurses Association, 2019). Video learning can also provide support and information in real time. Utilizing technology can have a positive impact on patient care through meeting their needs quickly and reducing

potential errors (WHO, 2019a). Video learning is being used more frequently to promote self-study techniques while incorporating technology (Roe, Carley, & Sherratt, 2010**).**

Using video-based learning achieves the six aims of the IOM, now known as Health and Medicine Division of the National Academies (Institue of Medicine, 2001). These aims are listed in the Quality Chasm report from the IOM calling for safe, effective, patient-centered, timely, efficient, and equitable care (IOM, 2001). Numerous studies show that e-learning is similarly or even more effective in comparison to traditional teaching (Leszczynski et al., 2018). Using video for e-learning purposes is easy to execute, safe as it adheres to best practice policies, effective in providing learning in real time patient scenarios, and quick to obtain (Leszczynski et al., 2018).

At the project site, the current practice of increasing ED nurses' confidence is through validation and collaboration from their peers, policies, or simply doing a google search on how to perform a task. This does not result in evidence-based practice. Implementing a consistent practice using electronic based learning supports evidence-based practice technology and serves the demand of working promptly and efficiently in the ED environment. The IOM produced a report titled *Future of Nurses 2020* with a goal of having 90% of clinically based decisions based on evidence of reliability, validity, and obtained from expert sources (American Nurses Credentialing Center, 2019). This report encourages nurse educators to incorporate more technology into their educational tactics, particularly competency-based educational (LeFlore & Thomas, 2016). Technology, or video-based modules, are attractive to the learner and teacher as it permits flexibility and review of information as it is readily available and accessible at a moment's notice. Utilizing electronic based learning can allow use of different platforms to address different types of learners (Institue of Medicine, 2001). As healthcare moves towards paperless, electronic based records, it is important to recognize the role of technology in the future of nursing practice.

The IOM report is calling upon health care education to become proficient with this innovation and create teaching methods outside of traditional teaching modules of classroom education (Milner et al., 2018).

ED nurses' competence in performing high risk, low frequency procedures are a crucial aspect of patient outcomes and ED nursing self-confidence and efficacy (Stephenson, Salih, & Cullen, 2015). When a nursing skill is taught, skill readiness and competency retention is an important component to address. Using video education has been used to improve patient safety and quality of care provided (Stephenson et al., 2015). Implementing video education modules to address the gaps of skill retention will improve nursing confidence, efficacy, patient satisfaction, and safety.

## Needs Assessment

Areas like the ED are perceived to be areas of high burn out in nursing due to the high-volume high demand area (Fry & MacGregor, 2014). How nurses' perceive themselves correlates to their job performance and satisfaction (Fry & MacGregor, 2014). Establishing professional worth and confidence can reduce burn out in the emergency department. Using technology for educational purposes supports evidence-based practice while adhering to the technological advancements in medicine (LeFlore & Thomas, 2016).

The Emergency Nurses Association (ENA) offers many online courses to improve education of the ED RN. This education is provided in the forms of continuing medical education (CME), online review courses, and certification practice tests. However, there is little information or availability of skills videos for ED RNs to use to learn and review procedures (ENA, 2019). The skills demonstration and educational sessions provided by the ENA focus on ED clinical skills or new medical technology. These sessions are only offered during national or regional conferences and occur a few times a year (ENA, 2019).

Furthermore, the conferences are an out of pocket cost to many ED RNs. This can make it challenging for ED RNs to gain access to up-to-date educational learning material and further deter them from increasing their evidence-based practice knowledge.

When presented with an unfamiliar or infrequently performed procedure, the RN may require immediate review of the procedure. The current research reflects that there is a global curiosity to improve ED patient quality care, ED nursing confidence, and incorporating more technology for educational purposes (Hassankhani et al., 2018). Research is being conducted in countries outside of the U.S. such as Afghanistan, Sweden, China, and England that are looking at the same clinical question surrounding ED nursing clinical education, skill retention, and ED nursing confidence (Hassankhani et al., 2018; WHO, 2019a). Future projects may explore the potential impact on creating a model to use innovative technology to improve general nursing quality care, saving money, and reducing poor patient outcomes.

A Magnet® designated, non-for-profit acute care hospital in northern New Jersey has an emergency department treating over 69,000 patients a year. The hospital serves over 32 towns in the Bergen County area providing care to up to 440,000 patients in a year. The ED nursing staff consists of 100 staff nurses, of which are 74 full-time nurses. This ED currently does not utilize video educational modules to assist with skill validation.

In order to understand the trajectory of success or failure for this project to be implemented a strength, weaknesses, opportunities, and threats (SWOT) analysis was performed. The strengths of this project are the ED nursing staff at this hospital are already utilizing electronic based charting and computers for documentation and barcoding medication administration. This made incorporating an online video educational module easily accessible to the staff. There is also a level of familiarity and comfort when utilizing technology. An additional strength is the support of the management and hospital who are

eager to implement and incorporate video technology to improve skill confidence and education in their ED. This project supports their continuous commitment to maintaining their Magnet® designation. This will further reflect their assurance to nursing excellence and hopefully results in the support of the project by both the staff and nursing leadership. A weakness of this project is the ED nursing staff may not be exposed to these clinical skills depicted in the videos during the time this project is implemented. The ED patient population is unpredictable and therefore cannot guarantee the nurses will need to use the video module if they are not presented with the clinical scenario. Another potential weakness is this project may complete with other priorities and other quality improvement initiatives already in place.

This project has an opportunity to create a process to increase nursing confidence for infrequently performed skills not only in the ED, but in other units as well. There is additional opportunity to not only be the first unit within the hospital, but the first hospital in the local area to have access to this type of evidence based innovative intervention. A possible threat is the project can face is an outside educational company selling pre-made videos to the hospital with a larger library of clinical skills. This could serve a greater market to the hospital because it would be available for all nursing staff as opposed to exclusively limiting the skills for ED nursing. Another threat can be the ED nursing staff may not want to take time to use a new intervention through the video modules and revert to their previously problem-solving tactics. There can also be other competing projects that the ED nurses are more committed to completing from their evidence-based practice council and other committees.

## Problem/Purpose Statement

ED nurses treat a variety of patient ailments and medical conditions. Emergency department nurses must be skilled to treat multiple medical problems at any given

time. However, they may not be confident in every emergency situation and there is no current mechanism for an ED nurse to review an underperformed clinical procedure. Therefore, frequent, readily available continuing education can assist with updating or reviewing certain high acuity and low frequency procedures/situations which the staff nurses identify them would like assistance with performing. This can be accomplished using video educational modules to review a procedure in these clinical situations.

## Clinical Question

The clinical question guiding this project was: "Can readily available standardized educational videos increase ED nurse confidence when performing clinical skills that are infrequently performed?"

## Aims & Objectives

The overall aim of this project was to increase the ED nurse's self-efficacy and confidence with the use of online video modules for infrequently performed clinical skills for the ED patient. The objectives of this project are to:

- Develop a video database of the top two clinical skills identified by an informal poll conducted by the ED nurse manager from feedback from the ED nursing staff.
- Evaluate the confidence levels of ED nursing staff performing anxiety producing clinical skills before and after the video module intervention.

## Review of Literature

An in-depth review of the literature was conducted to identify evidence related to electronic video learning to increase skill retention on infrequently performed clinical skills in emergency nursing. The key phrases used were *emergency nursing education, technology*

*education, e-based learning,* and *nursing confidence.* Specific search engines used included PubMed, CINAHL, Scopus, and Google Scholar and yielded 33,617 articles results. The search was further refined using the additional key phrases, *nursing skills* AND *competence* AND *nursing* AND *confidence* AND *skill retention* AND *video modules* AND *e-based learning.* Date delimitations were 2013 to the present year of 2019, in order to remain current with literature and practice changes. Inclusion criteria was scholarly/peer reviewed, full text articles written in English. Articles were excluded based on date of publication, clinical relevance, and overall content. A total of 53 articles remained for review. Gray literature was also searched and included position statements from the World Health Organization and Emergency Nurses Association. During the literature search, focus was on detection of current evidence-based education tactics using web-based or video technology for education and skill retention and their effects on nursing confidence. Studies reviewed included randomized control trials, qualitative studies focusing on nursing confidence, cohort studies, systematic reviews, quasi-experimental, meta-analysis, and position statements from national medical societies. Snowballing technique accounted for two additional studies. All articles were appraised using the John Hopkins Research Appraisal Tool for Research and Non-Research and included in the review of literature. After a thorough analysis of the literature, a total of 10 references were chosen, comprised of both research articles (9) and non-research articles (1) (see Appendix A).

Four of the studies collected for this review of literature were qualitative non-experimental studies. There was one randomized controlled experimental study, two quasi-experimental studies, two systematic review, and one position statement. A theme discovered in the literature review was the importance of supporting and developing self-confidence levels for registered nurses to increase job performance, satisfaction, and patient outcomes. Self-efficacy was frequently commented as a term used interchangeably with self-

confidence. The literature review found that these terms directly influenced one another. The terms of self-efficacy and self-confidence could be defined separately but, they were often used as interchangeable terms when measuring their effects on performance outcomes.

The literature discussed the benefits of using electronic based and video learning or learning techniques when providing education to medical students, nurses, and nurse practitioners. Specifically, the literature addressed video-based education to be effective for skill retention and to increase knowledge for healthcare professionals' practice. Through this literature review, the majority of the studies discovered in the search focused on using video simulation and skill retention for healthcare professional students. The literature supporting e-based learning focused on the overall appeal and satisfaction amongst the learners as their preferred learning style. Specific literature supporting video-based modules was used and discovered for this literature review but was challenging to find studies exclusively committed to this method for emergency nursing and medicine. It is expected this quality improvement project will assist to strengthen the conversation and research necessary for video-based education modules to increase nursing self-confidence specifically for emergency nursing profession.

**Self-Confidence & Self-Efficacy**

Establishing confidence impacts the nurse's ability to grow and develop in their professional practice (Fry & MacGregor, 2014). How a clinical professional perceives themselves effects their overall well-being and job performance (Karanikola, Doulougeri, Koutrouba, Giannakopoulou, & Papathanassoglou, 2018). A phenomenological study focusing on 16 Greek ED nurses was done analyzing their perceptions and emotional response to their professional-role worth and personal appraisal (Karanikola et al., 2018). Nurses admitted their perception of how well they accomplished a competency or skill was

critical to evaluating their professional self-worth and creating a positive professional image (Karanikola et al., 2018). A purposive sampling with ED nurses with 2 years of practice was used. The data for this study was obtained through individual phenomenological interview of open-ended questions in the Greek language. This study focused on the participants feelings, perceptions, professional role, personal and non-professional entity (Karanikola et al., 2018). Participants in this study frequently commented that errors in nursing treatment or clinical skills contributed to worsening levels of self-worth and withdrawal from progressing in their practice (Karanikola et al., 2018).

> Regarding the way I feel about myself, this is what makes me feel stronger, more confident: when I look at a problem from all angles, and I struggle to solve it, and we make it (as a therapeutic team) in the end, and the positive outcome is evident. This helps my confidence. (Karanikola et al., 2018, p. 5).

It was discovered, and suggested, that change processes that are being implemented in a hospital consider need to support and grow self-confidence in order to promote positive work environment for the nurses (Karanikola et al., 2018). This will likely create and influence a reduction of work-stress, improve patient quality of care, and career longevity (Karanikola et al., 2018).

The importance of developing professional self-worth was investigated by Fry and MacGregor (2014) . The creation of professional self-worth is first developed through self-efficacy (Fry & MacGregor, 2014). Self-worth is defined as one's confidence in their ability to do a task and drive their motivation (Fry & MacGregor, 2014). Self-confidence is created through an individual's perception of their self-efficacy and serves as a characteristic that nurses use to prioritize their nursing tasks and develop critical thinking in their practice (Fry & MacGregor, 2014). Fry & MacGregor (2014), acknowledge that previous research had not

been completed surrounding confidence development within chaotic changing medical environments, specifically the Emergency Department. Fry & MacGregor (2014), conducted a multi-centered qualitative study studying the creation of the role of Clinical Initiative Nurse (CIN) in three Emergency Departments in South Wales, Australia. This role permitted experienced nurses to take initiative in the assessment and treatment of patients within certain medical conditions. The 36 nurses in the CIN role were provided an 18 item semi-structured interview tool of opened ended questions to measure their self-efficacy and self-confidence of performing the necessary clinical skills for this role. A majority of the nurses interviewed commented on the direct correlation with their job performance and their ability to act effected by their level of confidence and efficacy (Fry & MacGregor, 2014). Confidence measures and analyzed the data using descriptive statistics, frequencies, and correlation statistics using SPSS v.19 to discover themes from the nurses in the study (Fry & MacGregor, 2014). The same majority of the nurses additionally spoke to their growth in self-confidence which they believed was influenced by their years of experience (Fry & MacGregor, 2014). An illustrative example of self-confidence is reflected in a participant explaining, “Five years ago, when I first started it was. . . I was moderately comfortable, and as the years have progressed I have become more confident [as a CIN]” (Fry & MacGregor, 2014, p. 93).

The study conducted 36 face to face interviews of nurses demographically measuring out to, 28 (78%) were females and the mean age was 39 years (SD 11.3 years) (Fry & MacGregor, 2014). The mean years of ED nursing experience was 12.2 years (SD 7.8 years) and those who were serving in the role of CIN had 5.8 years (SD 2.8 years) experience (Fry & MacGregor, 2014). The study participants expressed their years of experience and serving in the role of CIN enhanced their clinical knowledge and skills (Fry & MacGregor, 2014). The nurses in this study stated that their self-confidence was reduced or diminished by barriers such as high patient volume and acuity leading to increased feelings of job

dissatisfaction and job burnout (Fry & MacGregor, 2014). Increasing a nurse's self-confidence increased their desire and ability to be more motivated in completing clinical tasks that were not only new but had been previously accomplished (Fry & MacGregor, 2014). All of the nurses stated that if a task or clinical skill was more frequently performed they would exude stronger self-confidence (Fry & MacGregor, 2014). Further, these nurses stated clinical skills in which the nurse had a lack of exposure or frequency led to task avoidance and lower levels of self-confidence (Fry & MacGregor, 2014). It was suggested that task repetition should be incorporated to promote self-confidence, knowledge, and learning. Additional suggestions from this study included the creation of educational programs to support the development of self-confidence in order to influence to reduce inconsistences within practice (Fry & MacGregor, 2014).

Clinical skills the nurses in the study were uncomfortable or unfamiliar with performing resorted the nurses to "informally chatting" with colleagues regarding these specific tasks which they had lower levels of self-confidence in performing which they felt could prevent errors from occurring by checking with one another in an uncertain environment like the ED (Fry & MacGregor, 2014, p. 96). However, it was recognized "informally chatting" could create bias based on personal opinions rather than evidence-based practice (Fry & MacGregor, 2014, p. 96). Therefore, focusing on self-confidence in creating educational modules should be prioritized in order to develop strong clinical decision-making skills and facilitate evidence-based practice (Fry & MacGregor, 2014).

Self-confidence was validated byFry and MacGregor (2014) as a priority component of nursing professional development in order to execute clinical skills. Hassankhani et al. (2018) explored Iranian emergency nurses' ability to perform emergency skills and their perceived levels of confidence. This study was completed through a descriptive correlational study using three various parts of self-report questionnaire. The first part was a collection of

demographic characteristics of the participants. The second part of the data measured required the ED nurses to evaluate the frequency of their performance of 96 clinical skills that were later categorized into five various domains (Hassankhani et al., 2018). A 4-point Likert scale was used to evaluate the frequency in which the ED nursing skills were performed (Hassankhani et al., 2018). The last portion of data collection was another self-evaluation of the ED nurses ranking their self-confidence, of 18 questions using a 5-point Likert scale regarding performing the ED clinical skills. The reliability of the questionnaire was performed using a test-retest reliability of the questionnaire was found to be 0.77 to 0.92 (Hassankhani et al., 2018).

Overall, the nurses indicated they had a strong confidence level of 73.31 ± 14.2 for all of the skills inquired (Hassankhani et al., 2018). The highest level of confidence for performing a clinical skill was those most frequently performed r(=0.651, p<.001) (Hassankhani et al., 2018). A significant level of correlation was found between the nurses self-confidence and the frequency of the clinical skill performed ($r = 0.735$; $p < .001$) (Hassankhani et al., 2018). These authors acknowledged the critical elements of providing clinical exposure for emergency nurses to obtain additional clinical experience and education on infrequently performed clinical skills. Participants (81%), agreed that education competency would increase their clinical skills and professional practice and self-confidence (Hassankhani et al., 2018). This will prevent failure and deterioration of clinical self-confidence. It is important for emergency nurses to gain more experience and education on less frequently performed clinical skills to help prevent failure and deterioration of self-confidence (Hassankhani et al., 2018). It was recommended that emergency nurse leaders focus on finding interventions to support and create more frequent exposure of infrequently performed skills (Hassankhani et al., 2018).

**Skill Retention**

Skill retention and readiness are affiliated with nursing confidence (Stephenson et al., 2015). Emergency department nurses are exposed to an array of clinical skills some which classify as low-frequency procedures that are considered high risk (Stephenson et al., 2015). This study identified that there is no current literature suggesting the frequency in which these types of procedures should be competency and took place in a 50 bed, Level 4 neonatal intensive care unit at a large Midwestern academic medical center in the US (Stephenson et al., 2015). Ten neonatal nurse practitioners were included in this study which was executed in three phases with a 15 item didactic pre-test post-test using a web based video module to address skill competency for complex airways (Stephenson et al., 2015). Due to the limited sample size no statistical significance was discovered through a paired t-test ($t[8] = 2.121$, $p = 0.067$) (Stephenson et al., 2015). When asked to perform a return demonstration on the critical airways skills those in web module video group (4/5) had a higher rate of successfully accomplishing the task than those who did not use the video module (1/5) and a Pearson chi square was $2(1)=3.60$, $p=0.058$ (Stephenson et al., 2015). Therefore, the results indicate high risk low frequency procedures are challenging to provide continuous and consistent competency education for these specific procedures. These authors suggest to utilize web-based educational modules to close the lag in between educational demonstration and clinical performance (Stephenson et al., 2015). Additionally, this supports the IOM expectation of nurses practicing to their fullest scope of their education, license, through hands on training (Hassankhani et al., 2018; Stephenson et al., 2015).

Maintaining skill retention for ED nursing can be challenging because of the ever-changing evidence-based practice and chaotic environment. Limited time and lack of professional nursing educators are known to contribute to the delay of providing validation of clinical skill retention education and implementation of evidence-based practices (Koota,

Kaariainen, & Melender, 2018). A systematic review was conducted to discover published research that focused on educational interventions promoting evidence-based practice in emergency nurses and the educational interventions to enhance clinical skill retention (Koota et al., 2018). While Koota et al. (2018) found all included articles discussed the importance of providing education for skill retention when implementing EBP, none discussed how to effectively accomplish this task. ED nursing education should incorporate clinical skill education with the integration of self-learning packages that can be used over the internet (Koota et al., 2018). Four of these articles found statistical significance ($p=<0.05$) when used to improve ED nursing knowledge (Koota et al., 2018). Due to limited research on this topic future studies should be created using a randomized controlled trial method to place weight on the importance of these educational interventions (Koota et al., 2018).

The development and conditioning of self-confidence is important and visible by the patients receiving care (Chuang, Lai, Chang, & Wan, 2018). Performing clinical skills encompasses learning theoretical knowledge in addition to hands on procedure experience (Chuang et al., 2018). This method instills knowledge retention and increase the ability for skill execution (Chuang et al., 2018). Clinical skill retention, as discussed by Stephenson et al. (2015), is important to establish from the beginning of a student nurses' professional career. It was suggested through this study's findings, that more than one avenue of teaching should be attempted to addresses the multiple sensory components of the learner. This was achieved through creating video skills downloadable through a smart phone to measure if there was an effect on skill knowledge, skill confidence, and skill performance (Chuang et al., 2018).

The study evaluated 95 nursing students placed in an intervention and control group. The subject's results were evaluated through a knowledge quiz, confidence scale, and a skill performance evaluation, and an overall satisfaction questionnaire of using the video skills

demonstration. The findings discovered, when using the skill demonstration video, there was a higher level of significance for knowledge retention and for skill performance. In the intervention group knowledge increased from 17.48 (SD=2.72) to 17.84 (SD=2.56) & skill performance increased from 13.2, (SD=4.26) to 77.16 (SD= 16.12), ($p<0.0001$) to 76.72 (SD=13.09), ($p<0.0001$) (Chuang et al., 2018). However, there was no statistical significance in the subjects' level of confidence 13.2 (SD=4.26) to 12.67 (SD=3.69). Students overall commented they enjoyed using the video demonstration skills better than traditional classroom technique ranking the intervention 4.46 (SD=0.43) on a scale of 1-5 (Chuang et al., 2018). This aligns with previous studies discussion of increasing engagement to desire to be exposed more frequently to skills that are less comfortable (Fry & MacGregor, 2014; Hassankhani et al., 2018).

**Video Modules**

Creating alternative educational avenues for assessing nursing clinical skill retention and theoretical knowledge has been established by the literature to be challenging to achieve in the ED nursing environment. The advancement of using video technology can permit educational access to nurses at any time (WHO, 2015). Dr Josip Car, from the School of Public Health at Imperial College London, conducted a systematic review of 108 studies concluding the support for instructional video education modules to be used for health care professional students, in clinical practice, and for patient education (WHO, 2015). The WHO (2015) supports electronic based education to be used as an outlet to train the future of healthcare professionals. It is further recommended to use e-based learning methods to provide global educational opportunities (WHO, 2015).

Using a visual aid, such as a video, can increase knowledge retention by attracting the learners to remember the material at a later point in time and recall the progress of clinical

procedures (Ahmet, Gamze, Rustem, & Sezen, 2018). A systematic review with meta-analyses was conducted to discover the effects of video-based education for surgical skill retention (Ahmet et al., 2018). Four of the studies in this systematic review resulted in clinical skill improvement with the use of video-based education. This intervention resulted in statistical significance for clinical performance ($p=0.0001$) and theoretical understanding ($p=0.003$). One of the studies in the systematic review, analyzed three various practices using video-based education. These practices included self-study with video; self-study with interactive video, or a combination of all the practices which was self-study with interactive video with the addition of subsequent instruction by an expert (Ahmet et al., 2018). There was significant improvement in the post-test evaluation for theoretical knowledge and skill retention, and no statistical significance was discovered between the three different practices ($p<0.01$) (Ahmet et al., 2018).

Ahmet et al. (2018) noted that there is a need to research unconventional educational methods, however there is minimal research completed to date surrounding video-based education. This review consisted of fair to good quality studies supporting the improvement of skill knowledge and retention when using video-based education (Ahmet et al., 2018). Several of the studies in this systematic review noted that video-based education was an exceptional educational methods compared to traditional classroom education (Ahmet et al., 2018). Using instruction video-based education prior to performing a skill can decrease the learning time of new trainees and support and improve patient safety outcomes (Ahmet et al., 2018). This study validates the benefit of using video-based education for clinical skill knowledge and retention.

Ensuring that the best method of teaching is used for medical professional education is important as the knowledge acquired will impact patient outcomes as the clinicians will translate their knowledge into patient care practice (Wong, Apthrorpe, Ruiz, & Nanayakkara,

2018). An identifiable time gap between clinical skill education to clinical skill execution can hinder the clinicians ability to perform the skills successfully and accurately (Wong et al., 2018). Wong et al. (2018) note the current literature supports videos as a method of teaching practical procedures and discuss the support for millennial learners who are accustomed to using digital technology benefiting from this type of educational tactic. This method of education caters to the generation of new health care professionals who are entering into the healthcare workforce. Video-education, for clinical skill procedures, instantly answers questions, provides feedback, and offers the healthcare professional immediate validation (Wong et al., 2018).

The lack of current literature to evaluate the effectiveness of using video-based education was acknowledged in this study by (IHI, 2019). Videos for education and instruction have found to develop skills cognitively and in knowledge retention (Wong et al., 2018). Wong et al. (2018) investigated the usage of video education to instruct 32 second-year dental student's anesthesia skills at the large academic university in Sydney, Australia. The study evaluated the student's response to using videos for clinical skill review after watching prior to be performing the skill for evaluation. Of the 32 students, 90% of them both believed the videos increased their skill accuracy and agreed the videos assisted with reviewing challenging clinical skills (Wong et al., 2018). It was discovered that there was a statistical significance and correlation between those who watched the video skills more frequently and their increased academic score performance. Statistically significant correlation between the number of views of the videos on administration of block injections and the marks received for practical assessment ($r = 0.36$, $p = 0.05$) was identified. Furthermore, when theory and practical marks were combined, a statistically significant correlation was observed between the number of views of the block injection videos and the assessment marks ($r = 0.362$, $p = 0.049$) (Wong et al., 2018, p. 7).

Thus, concluding the relative necessity of having video-based education for clinical skill review for health care professionals. Future research should be conducted to evaluate the impact of video-based education on confidence and competence which is the goal of this quality project (Wong et al., 2018). The use of video education module can improve not only the performance of clinical skills but can assist with clinical case scenarios. Kumar, Sawyer, and Williams (2019), researched how video-based education training facilitated providers to have challenging conversations leading to improvement in their clinical skills. This study recognized the strong association and impact video-based education has on clinical technique, skill adoption, and clinical confidence (Kumar et al., 2019). Task avoidance due to lack of knowledge or fear can generate poor patient outcomes (Kumar et al., 2019). The authors conducted this study to increase HPV vaccination compliance in a population where the vaccination was being avoided. The medical providers in this population admitted to experiencing challenges discussing the vaccination options with their patients and guardians (Kumar et al., 2019). This study assisted medical professionals' clinical practice through increasing their knowledge of the vaccination statistical data, expanding their ability to discuss vaccination education, and the administration of the HPV vaccination. Three 20-minute video-modules were created focusing on the barriers of the HPV vaccination a health care professional may encounter when providing the vaccination to their patients. (Kumar et al., 2019). This video was then used by 96 various pediatric health care professionals including medical residents, nurses, medical doctors, and pediatric patient care technicians across six sites in San Diego, California. The medical professionals were provided a pre and post-test knowledge quiz and evaluation of their experience. The video education provided a substantial statistical significance ($p<.05$) in generating new knowledge and confidence in discussing the vaccination with patients and their guardians (Kumar et al., 2019).

## Theoretical Model

The theoretical model used for this project was the Plan-Do-Study-Act (PDSA) cycle (Agency for Healthcare Research and Quality, 2013). This model is recommended by the Institute for Healthcare Model for Improvement (IHI, 2019) for quality improvement projects. This framework has four distinct steps. The steps in this process are to (a) plan the test or observation, (b) test the desired intervention for change into a small scale, (c) study the results and analyze the data, and (d) act those results into changes (IHI, 2019). The PDSA cycle is used and recommended for action-oriented learning (Coury et al., 2017). This theoretical framework is used to evaluate quality improvement projects to assess that the changes will create a desired improvement, the amount of change it will create, and the impact it will have upon the desired population. Through testing change in these small increments can potentially minimize resistance to change implementation (Coury et al., 2017). The PDSA process assists with creating a new program in environments with complex systems like the Emergency Department. This theoretical model facilitates large changes in complex environments into smaller more attainable and quantifiable variations.

The conceptual framework for this project can be found in Appendix B. The overall purpose of this project was to evaluate the effectiveness of using video educational modules for ED nurses to use for infrequently performed skills. It is expected this will increase ED nursing confidence. The "Plan" for this project was to obtain clinical skills that have lower levels of confidence from an informal poll conducted by the sites nursing manager. The staff was then asked in a pre-survey to evaluate their confidence of the two skills that have been determined by the sites nursing manager. This was obtained using a 5-point Likert scale, ranging from 1(least confident) to 5 (most confident), the ED nurses will self-evaluate their perceived level of confidence in performing the itemized list of ED nursing skills. The "Do" for this project included the investigator creating a video module of a step by step instruction

on how to perform the clinical skills. The video was created and focused on the two least confident ED nursing skills from the results of the pre-survey. The "Study" of this project had the ED nursing staff use the video modules prior to performing the clinical skills they indicated elicited the least amount of confidence. A post-survey of the ED nursing staff was conducted to evaluate their level of confidence after performing the clinical skill with the assistance of the video module. These results were achieved through a post-survey using a 5-point Likert scale ranging from 1 (least confident) to 5 (most confident). The "Act" of this study was based on the results obtained from the surveys in order to determine if more videos should be created for additional infrequently performed ED nursing skills. The PDSA theoretical framework guided this project to evaluate ED nursing confidence using video-based educational modules for infrequently performed clinical skills.

## Methodology

The purpose of this pilot project was to implement a quality improvement program to improve the self- confidence of emergency nurses when performing infrequently used clinical skills through the use of video modules. This project took place in an emergency department of a large community hospital in northern New Jersey. IRB approval was obtained from both Rutgers and the site hospital IRB, which served as the IRB of record. The study was a pre-test and post-test and program evaluation design using the Confidence (C-Scale) created by Susan Grundy (1993) & the Student Satisfaction and Self-Confidence in Learning created and validated by the National League of Nursing served as the program evaluation.

### Setting

The project was conducted at a 451-bed not-for-profit community hospital in the ED of suburban northern New Jersey. This ED treats 74,000 patients a year and maintains 40

treatment rooms in their department. The ED is composed of a staff of 100 registered nurses of whom are 74 full time registered nurses.

**Study Population**

This project included a purposeful sample of emergency department registered nurses in a northern New Jersey hospital. Inclusion criteria included ED nurses with more than 1 year of experience. Exclusion criteria was nurses who are not primarily employed by the emergency department including those from the hospital's float pool or agency nurses. Based upon an a priori power analysis based upon the 70 full time employed nurses by the ED, a 95% confidence interval and a 5% margin of error, the necessary sample size was 60 participants (Raosoft, 2004). This project was considered a pilot project and therefore had an expected to have a sample size of 25 participants.

**Subject Recruitment**

Information regarding video education modules was disseminated via recruitment flyers displayed in the break room in the ED. An email was distributed to the staff from the manager of the department to inform staff of the in-person recruitment sessions. Efforts to recruit will also be made in-person by the co-principal investigator (CI). The recruitment sessions took place during shift huddle which takes place three times a day at 7a.m., 11.a.m. & 7p.m in the ED break room. Recruitment through these methods lasted for one week in order to capture as many potential staff members as possible. Access to potential participants was achieved through a generated e-mail list provided by the ED administrative manager. This e-mail was sent by the ED manager on behalf of the CI. This e-mail contained a summary of the project as well as contact information for the CI for any questions or concerns. Potential participants were informed that participation in the program is a voluntary, supplemental service and their decision to participate will not impact their

employment of the delivery usual care. Copies of the recruitment materials can be found in Appendix C &D.

**Consent Procedure**

Consent was obtained through subject participation and agreement to the intervention. Participants were notified about the study through an email recruitment flyer, and an informational session. The consent for this study was outlined and discussed with any participants prior to the study. Within the IRB-approved consent, see Appendix E, details are listed regarding the benefits, risks, lack of financial disclosure, steps for withdrawal from participation at any time, and how the principal investigator will maintain participant confidentiality. The co-principal investigator (CI) contact information was provided. The consent document was distributed to individuals interested in participating in the study.

**Risks/Harms/Ethical Considerations**

Participation in this study posed minimal risk. There was a small possibility that personal information collected may be inadvertently shared by participating in this project. Demographics will include gender, age, education, and years of ED nursing experience. Each participant was assigned a number. This allowed for the data to be reviewed without direct link to names. Only the CI had access to the list linking names to the number associated with the data.

- There was no anticipated discomfort for participants in this study, so risk to participants was minimal.
- Questions participants were asked may have caused them to think about feelings or experiences that could make them feel sad or upset.
- Participants were informed of any new findings that may affect their decision to remain in the study.

**Subject Costs & Compensation**

There was no cost to participate in this project. Subjects did not receive monetary compensation for their participation in the project however, light refreshments were provided at the recruitment information sessions.

**Study Intervention**

The intervention was the use of video modules of two of the most infrequently performed procedures as identified by an informal poll conducted by the ED nurse manager at the site. These skills, determined by the ED nurse manager, were the insertion and access of an implanted port and the setting up of an Arterial Line (A-Line). The video was created using the sites policies and procedures protocol that align with each clinical skill. The CI utilized additional support from the ED manager, sites educational department, and their Nursing Reference Center plus online video clinical skills catalog to ensure quality & compliancy of protocols was maintained when creating the videos. The pre-test and post-test, using the C-scale, were identical and were administered to participants one week before the implementation of the video module and immediately after completion of the module, respectively (see Appendix F&H). The program evaluation was different from the pre-test and post-test, using the scale from the National League of Nursing, and was administered to participants immediately after the completion of the module with the post-test, as well (see Appendix G). A pre-survey confidence scale using a Likert Scale of 1-5 from the C-Scale created by (Grundy, 1993) was used, see Appendix F, and distributed to participants one week before the intervention. The video was a pre-recorded video from the CIs video camera. The filming and recording of the video skills was conducted on the property of the site using their clinical equipment and strictly followed the sites policy and procedures protocol. The video was uploaded with an attached link and distributed to the nurses for use and viewing at any time during their shift. The video module was available for participants

for one month. Upon the completion of the one month of the video modules being available, the ED nursing staff then immediately received a post-survey confidence scale using the same Likert scale rating of 1-5 from the C- scale by Grundy (1993), see Appendix F&G, was collected for analysis. Participants at this time also completed another program evaluation, confidence scale using a Likert scale rating of 1-5 from National League of Nursing Student Satisfaction and Self-Confidence in Learning tool, see Appendix H, and was collected for analysis. These results were then analyzed to determine if the use of the modules has increased ED nurses' confidence. The total scores from the pre- and post-test and the post-post-test were used to measure the intervention's outcome on the participant's level of confidence. This was obtained with a summation of the individual scores that will be averaged together to obtain a mean total from the participants.

**Outcome Measures**

The purpose of this study was to determine if ED nursing confidence increases with the use of a video module prior to performing an infrequently performed skill. The C-Scale was originally created by Grundy (1993) in order to evaluate nursing students' level of confidence in performing nursing skills. While the original intention of this scale was to evaluate nursing student's confidence performing physical assessments, it can be modified for any and all nursing skills and permission was obtained to do so for this project (Grundy, 1993; Valizadeh, Amini, Fathi-Azar, Shahrzad, & Akbarzadeh, 2013). This C-scale contains a Likert-scale rating 1-5 and has been tested for reliability and validity (Grundy, 1993; Valizadeh et al., 2013). The C-scale has a reported Cronbach's alpha ranges from 0.84 to 0.93 (Grundy, 1993; Valizadeh et al., 2013). Statistical data that will be completed for this project will be a paired t-test. Permission to use this scale and to modify this tool to adapt to this project was obtained from the project creator (Grundy, 1993). The program evaluation will be tested with the student satisfaction and confidence level scale from the National

League of Nursing and will use a Likert scale which has been tested for reliability and validity (National League for Nursing, 2019). Reliability for testing consistency was tested using Cronbach's alpha: satisfaction = 0.94; self-confidence = 0.87 (National League for Nursing, 2019). The tool to be used is a 13-item instrument designed to measure student satisfaction (five items) with the simulation activity and self-confidence in learning (eight items) using a five-point scale. Statistical data that will be completed for this project will be a paired t-test. Permission to use this scale was obtained but not required for this project (National League for Nursing, 2019).

**Project Timeline**

Upon completion of proposal in May 2019 it was submitted for site IRB approval. This was obtained in June of 2019. The proposal was then also be submitted for Rutgers IRB approval in July of 2019. The study began in August 2019 following both site and Rutgers IRB approval. Phase one was the ED nurse manager conducting an informal poll with the ED nursing staff evaluating their confidence level in performing listed emergency nursing skills. This was completed over the course of one week in July 2019. The intervention of using the video modules became available for the month of August 2019. The post survey was conducted over the course of one week in September 2019 to evaluate the confidence levels after reviewing the intervention. Data analysis was completed over the course of two weeks in September of 2019. Evaluation of the project will be completed over the course of October 2019. Presentation of project will be completed in October 2019. Graduation May 2020. The timeline can be found in Appendix I.

**Resources Needed**

The costs associated for this project were sole responsibility of the CI. Costs included recruitment materials, educational handouts, and materials for educational program. There are

also research expenses that were included in the budget for this project. A finalized budget is located in Appendix J.

## Evaluation Plan

### Data Analysis

To determine statistically significant differences of levels of confidence between the pre- and post-video educational modules, a paired t-test was used. A paired-t test was the analysis chosen as comparison is among the same group of people at two different points in time. Descriptive statistics was used to describe the sample of participants. The statistical software package of SPSS used for completion of data analysis.

### Maintenance & Security

Subjects who participate in this study were provided with a randomized ID number by the CI to use on both the PHI data collection and quality improvement program evaluation. The CI administered pre and post-test surveys. The master list linking the patient to the random ID code was kept separately from the actual surveys. Surveys were stored within the project site, in a locked cabinet. This locked cabinet was located in the ED nursing management office located at the projects site in a locked cabinet. Data was de-identified upon completion of data collection and only de-identified data was used for analysis.

Upon completion of the project, closure of the IRB, and final writing of the manuscript all data was destroyed in accordance with Rutgers University guidelines. Hard copies of consents and aggregate data will be housed in the locked office of the DNP Project Chair at Rutgers University Stanley S. Bergen Building, 65 Bergen St Office #1130, Newark, New Jersey, 07107.

# Results

## Findings

A total of 25 participants participated in the study. The findings of the project reflected as an increase in confidence related to the video educational module. This was demonstrated by a statistically significant difference in the pre- test and post- test scores, with an overall increase in confidence post-test & post-post-test after the implementation of the video educational module. The average pre-test score was 13.36 indicating participants felt confident in a "good number of steps." The average post-test score was 19.16 indicating participants felt confidence in performing "almost all of the steps." This is an increase of confidence level score by 5.8. The paired t-test conducted between the pre- and post-test score provided a statistically significant p value of .005. The average score of the program evaluation was 4.64 indicating that the participants "agreed" to "strongly agreed" the video modules program was an effective teaching method. The data analysis findings of the pre & post test conducted using SPSS can be found in a table format in Appendix K&L. A bar graph of the findings of the pre & post test data and program evaluation can be found in reflected in Appendix M&N.

# Discussion

The results of this study support previously established literature of the importance and necessity of evaluating self-confidence for nurses. The study focused on the self-confidence levels of ED nurses in relation to their perceived clinical performance of infrequently performed ED skills. This was established and supported by (Fry & McGregor, 2014) study which acknowledged the lack of research focusing on developing self-confidence within ED nurses. Fry & McGregor, (2014) supported and recommended the importance and profound impact self-confidence can have on providing quality patient care. Fry & McGregor

(2014) also validated and advocated for the creation of educational programs which focused on improving self-confidence in areas such as the ED.

This pilot study identified that there is an impact on ED nurse's self-confidence with infrequently performed clinical skills. The project site lacked a protocol for how frequently they validate clinical skills. Stephenson et al. (2015) highlight the importance of frequent skill validation in order to provide for infrequently performed schools. Stephenson et al. (2015) supported the findings of this study by using a web video module to offer competency education. Stephenson et al. (2015) discovered those participants who used the video module performed the clinical skill more accurately than those who did not. These authors also acknowledged the challenges with creating reoccurring education for procedures which are infrequently performed as there is no universal protocol for skill competency and re-education. The study by Stephenson et al. (2015) supported their study's findings by proposing to use web-based modules to provide education and clinical skill demonstration more frequently.

The results of this pilot study also support previously established literature of the effectiveness, appeal, satisfaction, and accessibility achieved through using video module for nursing education (Wong et al., 2018). The key findings of this pilot study are a step by step instructional video module can increase ED nurses' level of self-confidence when performing infrequently performed clinical skills. The study conducted by Wong et al. (2018), resulted in 90% of their participants agreeing to watch instructional videos improve their ability in completing skills they found to be difficult or unfamiliar. Wong et al. (2018) found a statistical significance between an increase in skill demonstrated accuracy with those who relied on watching the video multiple times. Wong et al. (2018) supports the effectiveness and need for video-based education for clinical skills in a health care environment Wong et al. (2018) also recommend additional research be completed to evaluate the impact of video-

based education on confidence levels. This was validated through this pilot study's results of participants strongly agreeing with the effectiveness of the video method on their level of confidence through the program evaluation that was administered. The contributions this pilot study has contributed is added research to the relationship and positive effect on video educational and confidence levels amongst health care professionals.

This pilot study achieved both of its objectives. The first objective that was achieved was developing a video of the two ED nursing skills that were identified by the staff as infrequently performed elicited the least confidence. These two clinical skills were setting up an arterial line and accessing an implanted subcutaneous Port a Catheter. This was easily achieved with the coordination of the site's education department, sites nurse manager, and the co-investigator (CI) who performed the demonstration and filming of the videos. The site of the study was supportive making the equipment readily available and privacy to film the videos.

The second objective that was achieved was to evaluate the levels of confidence before and after of watching the videos of the participants. This was easily achieved through the support of the site and cooperation of the staff. The videos continue to remain available to all of the staff at the study's site so they can be used for future reference.

Some unintended consequences were the underestimation by the CI as to how long it would take to create the videos. This included multiple sessions of editing and voice overs in coordination with the video editor. There was great detail that was reviewed to ensure the captions matched the verbal dialogue on the videos in accordance with the policies and procedures. A negative consequence was implementing the study during a popular vacation month where maybe more participants would have agreed to fully participate in the study. There was also a surge of staff at the studies site who were new graduate RNs and float pool

nurses who could not be considered candidates for the study. It was also challenging not having complete communication access to the participants to remind them more frequently as all communication had to go through the sites nurse manager.

## Implications

### Clinical Practice

The purpose of this pilot study was to improve clinical practice by evaluating the effectiveness of using video modules to increasing ED nurses' level of confidence. While there were only two videos created for this study, more could be created for a larger library of clinical skills. This can be created in multiple clinical and educational settings. The videos are accessible through any online device widening the platform of accessibility. The videos can be accessible to other units within the hospital who infrequently perform these skills as well.

Using video based instructional education can provide education all health care professionals in a variety of settings both within a hospital and a hospital. This could be appealing to larger health care systems that have multiple facilities across many areas. Providing universal accessibility of these videos through an electronic source will make education of best practice easy and effective. This will support the findings of this study to increase nursing self-confidence of infrequently performed skills used video-based education.

In the ED nurses can quickly refer to these videos for correct and accurate information. This eliminates the fear of not knowing how to perform a clinical skill and provide validation for the steps the ED nurse may be familiar with. These videos provide support throughout all hours of the day when an official expert, such as the ED educator, is unavailable. These videos demonstrate step by step instruction and reflected the written steps of the policies and procedures of the facility. Reading a policy and procedure is not always

an ideal method of validation in a high acuity fast paced environment such as the ED. These videos can be beneficial to providers to perform clinical skills they have not had exposure to as well.

**Healthcare Policy**

In terms of healthcare policy, the videos followed the policies and procedures outline and approved by the sites evidence-based practice & policies and procedures council. These policies have been created to ensure best practice is being administered at every step of patient care. These policies have been created by the project sites councils and are based off of recommended guidelines from various national accreditations such as The Society of Critical Care Medicine & The Society of Oncology Medicine. Establishing and adhering to policies and procedures are critical to obtaining and maintain stakeholder accreditation such as The Joint Commission (TJC) & Magnet Recognition. These accreditations certify a health care institute is delivering quality, safe, and impactful patient care experiences. Evidenced based practice and technology are blending into a simultaneously expectation of the future of nursing. Changing how medical education is taught is advancing with the assistance of video technology in order to provide quality evidence-based care.

**Quality & Safety**

Increasing the ED nurse's confidence can improve the quality and safety of patient care. The quality and accuracy of care delivered has a direct reflection on a nurse's confidence. This has been reflected in previous established literature (Stephenson, 2015). While, patient satisfaction and accuracy of skill execution were not evaluated in this study it could potentially be analyzed and evaluated to see if this has a future impact on positive patient outcomes. Using a step-by-step instructional video can ensure the nurse is taking the

time to remain complaint with the policy and procedures of delivering safe quality healthcare to their patients. Therefore, reducing any potential negative outcomes and medical errors.

**Education**

The indication for education for this study is to expand the library of videos for additional clinical skills for the ED nurses. This study only focused on the top two infrequently performed skills which made the ED nurses feel the least confident in performing. These videos can be used to provide education for other areas of nursing within the study's site as well as to the healthcare professionals of various disciplines. This could include other healthcare professional students as well. It is suggested watching the videos could become a department requirement in order to maintain skill retention more frequently without having to provide in person educational sessions. This can be particularly appealing to an unpredictable environment such as the ED.

There is no limitation or restrictions as to how to further education for this type of video intervention. The videos can be created to cater to department or clinician specific clinical needs. The staff can re-create the videos themselves in order to promote commitment to evidence-based practice and electronic learning. The videos can be placed on a larger electronic platform for healthcare professionals to access at their leisure. This format of education can be used for those whom make not frequently be up to date with the changing policies and procedures of the department, such as per-diem and travel nurses. Continuous and consistent validation of skill demonstration can support and contribute to the need for literature and research supporting nursing confidence specifically for ED nurses.

**Economic**

This project is an economically low-cost intervention for the education department and the emergency department at this site. The implementation of video-based education can

reduce medical errors by supporting and providing correct performance of clinical skills. Medical errors can lead to lack of reimbursement as well as poor patient outcomes including death and disability. As previously addressed by Kent (2016), medical errors can cost up to $1.7 billion in medical errors correlating to over 2,000 lives.

This study economically reduces waste of medical supplies by reducing the number of attempts the ED nurse may need to attempt due to their lack of confidence. This can save the hospital on unnecessary overspending on medical supplies. Patients can also benefit from the ED nurses having these videos because it can decrease their length of stay in the ED. Successfully performing a clinical skill can decrease any delays with patients' final disposition. This in turn, can increase patient's satisfaction and bring the site revenue in future business based on patient satisfaction scores and positive word of mouth. Since it is estimated the average person in 2016 spends up to $9,000 per year (WHO,2019b) it is worth health care facilities to utilize and consider creating and implementing a low cost intervention to improve the quality of patient care such as the video modules used in this study.

## Sustainability

The videos provided to the site can be continued to be offered to the sites department. In the future, the video library can be enhanced by themes of clinical skills and can be expanded to other departments of the site's hospital. The concept can also be applied to graduate students in a nurse practitioner programs and additionally offered to other graduate level health care professional programs. The more videos created to develop a library of up to date step by step video instruction can be created supporting evidence-based practice. These videos can be continued to use a standard of practice to validate levels of confidence and skill accuracy. The more videos created and made available can be shared with the sites

education department and used as a tool for skills validation and on their education day for skill demonstration.

This study has the potential to be carried out in a various number of avenues for future DNP projects. These video modules could be used throughout the department and expanded to have content for new hires to use throughout the health system for the education department to utilize and expand upon in the future. It may be considered to have staff participant and develop the content in order to increase knowledge content and engagement commitment to evidence-based practice. The videos could be used to measure for skill accuracy and retention in a longer implementation period. This could contribute to future research of appropriate time between skill teaching and re-competency education. This project could also be expanded through evaluating ED nurses in real-time by evaluating their level of confidence before, watching a video, performing that clinical skill, and evaluating their level of confidence immediately after. This could also monitor how frequently skills are performed to enlighten the ED departments educator how frequently competencies should be performed.

For additional future projects it is recommended to separate the skills for pre & post-test evaluation. Participants completing the pre-test often commented that while these skills were infrequently performed some participants felt they were stronger in one skill set than the other. This could have potentially skewed the pre-test scores to be higher than if individualized by skill set. This study could be repeated using the same modules and pre and post-test design but by separating the skills.

This study did not evaluate the amount of years of ED nursing experience of the participants which could affect the perceived level of confidence. The same study can be repeated to address if there is any correlation with ED nursing years of experience with perceived levels of confidence. This study did not asses how many times the videos were

viewed which could also be measured in a future study to validate if it has any significance on levels of confidence. This project could be expanded for future DNP projects to evaluate nursing confidence and its effect on specific clinical skills for a longer period time in other various areas of nursing specialties.

**Future Scholarship**

This study could be carried out by both new and experienced nurse practitioners for skill development. Specifically, for those nurse practitioners who are new graduates. There will be a whole new set of advanced skills that will elicit feelings of lack of confidence. Using the statistical significance of the findings of this project, it can be brought to sites where they hire nurse practitioners for a fellowship or new graduate program. Creating a video database for new graduate nurse practitioners can increase their confidence and feel more supported throughout their transition from a bedside nurse to a Nurse Practitioner. This study could be used for other medical professions such as medical residents as well. A business of creating these video libraries using site specific information can be created for areas of nursing and medical professional who wish to increase confidence for infrequently performed clinical skills.

**Dissemination**

The results of the project have been disseminated to the director of the project sites ED as well as the director of the education department. The results of the project have been disseminated to those at Rutgers University for requirements of the DNP. This project will be presented at the Rutgers Poster Day in April of 2020. This study has been submitted as an abstract to the New Jersey League of Nursing for presentation at their conference in 2020. This project will also be presented at the sites request for their research day and evidence-based practice council. It is anticipated that the video educational intervention will be

accepted by the sites ED as a permanent educational module with expansion to its library for additional nursing skills that can be used by the staff at all times. This project, with anticipation, will be disseminated to the *Advanced Emergency Nursing Journal* for publication. This project could potentially be presented at the Emergency Nurses Association in the Fall 2020 at their state conference via a poster presentation.

## Summary

This project improved ED nurses' level of confidence using a video technology intervention was successfully achieved. The data findings in this project showed the statistical significance discovered using video instruction and ED nurses' level of confidence. The research has shown a lack of literature researching level of confidence specifically in the emergency department. The research has also demonstrated the multiple effects and importance on supporting and developing self-confidence within nurses specifically serving in the ED. It is important to continue research focusing in this area due to the high burn out rates associated with ED nurses.

The literature surrounding video-based education is not large but supports the use of electronic and video-based technology as an evidence-based practice intervention by multiple globally respected health care organizations such as the World Health Organization and the Institute of Medicine. The video modules were administered through a link available for viewing online from participants at the study site. The results of this study also reflected an overall appeal from participants supporting this type of learning format is effective specifically in supporting their level of confidence in emergency department environments.

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# Appendix A

## Table of Evidence

"Can readily available standardized educational videos increase ED nurse confidence when performing clinical skills that are infrequently performed?"

| Article | Author & Date | Evidence Type | Sample, Sample Size & Setting | Study findings that help answer the EBP | Limitations | Evidence Level & Quality |
|---|---|---|---|---|---|---|
| 1 | Karanikola et al., 2018, A phenomenological investigation of the interplay among professional worth appraisal, self-esteem, and self-perception in nurses: The revelation of an internal and external criteria system | Research (Qualitative Phenomenological ) | Munhall's methodology n=16 emergency nurses, focusing on their perceptions and feelings about personal and professional-role worth appraisal. | -Participants described internal and external criteria which they evaluate their professional role worth<br>-The effect of treatment errors appeared to be determined both by the severity and the nature of the medical error interlinking professional self-concepts influencing each other,<br>-same findings of personal and professional worth appraisal | -Greek language, some values could have been misinterpreted<br>-Small sample size | Level III Quality C |
| 2 | Fry & MacGregor, 2014, Confidence and impact on clinical decision-making and | Research (Qualitative ) | -South Wales<br>-3 EDs and included a metropolitan university | -Confidence effects a clinician's problem-solving skills and defines how one performs in | -Small sample size. –Sample consisted of only experienced ED nurses who may have a separate point | Level III Quality B |

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| | behavior in the emergency department | | , a regional referral hospital, and a regional hospital<br>-N=52 participants were included in the study. N=16 nonparticipant observations (13 females, 3 males) were conducted 65 hours total.<br>-3 different sites n=36 (28 females, 8 males) face to face interviews | clinical situations<br>-Confidence is essential to develop and expand to encourage resilience.<br>- Education programs need to focus on strategies that can promote and support the development of self-confidence and resilience. | of view compared to ED nurses with less experience.<br>-The sample group was not inclusive of (CINs)<br>- 3 study sites were a mixed ED population,<br>-Results limited for solely ED pediatric facilities. | |

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|---|---|---|---|---|---|---|
| 3 | Hassankhani et al, 2018, Clinical skills performed by Iranian Emergency Nurses: Perceived competency levels and attitudes towards expanding professional roles. | Research (Qualitative) | -30 educational and private hospitals in Iran in 17 cities were included.<br>-n=319. (73%) had less than 5 years of ED nursing experience, and only 14% had more than 20 years of experience<br>-50 questionnaire<br>340 were returned (75.5%)<br>-Inclusion criteria ED nurses with academic degrees BSN (95%) 6 months of experience | - Skills performed more frequently, nurses related greater levels of perceived competence & confidence for those skills<br>-Supports the importance of continuing education for emergency nurses.<br>-Investigate nurses' clinical competence using direct and observed measures,<br>-The need for additional research<br>-Important for emergency nurses to gain more experience and education on less frequently performed clinical skills<br>-Overall competency of the emergency nurses was -73.31 ± 14.2, indicating a good level of | Convenience Sampling was used.<br>-Self-report of the questionnaire could create response bias.<br>-Additional research needed to measure levels of competence through measures other than self-report.<br><br>Investigation of nurses' clinical competence using direct and observed measures is important | Level III Quality A |

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| | | | | perceived competence.<br>-Competence with less frequently performed skills(2.70 ± 0.94)<br>-Monitoring therapeutic interventions (2.60 ± 0.97);<br>- Significant correlation frequency of performing clinical skills and competency level (r = 0.651, P<.001)<br>-Participant attitude (2.13 ± 0.92), 81.5% improve their job satisfaction | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | Stephenson, Evelyn<br>Salih, Zeynep<br>Cullen, Deborah L., 2015,<br><br>Advanced practice nursing simulation for neonatal skill competency: A pilot study for successful continuing education | Research (Quasi Experimental | -50-bed, Level 4 neonatal intensive care unit (NICU) large midwestern United States academic medical center.<br>-n= 10 female NNP, n=5 NNPs had been nurses for less than 10 years and n=5 had been nurses for more than 5 years.<br>-divided two groups with follow up after 6 months | -Study explored competency retention.<br>-Common concern when new procedures are introduced for infrequently used skills.<br>-Positive trend in maintaining competency by using web-based content review for the low-frequency procedure of complex airway management<br>- Time-efficient, cost-effective mechanism for staff to maintain competency in high-risk, low-frequency procedures<br>- No statistical significant difference was noted pretest and posttest knowledge scores (t[8] = 2.121, p = 0.067). | -Limitation small sample size.<br>-Additional research should include a greater number of participants to demonstrate statistical power. | Level II<br>Quality C |

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| 5 | Koota, Kaariainen, Melender, 2018,<br><br>Educational interventions promoting evidence-based practice among emergency nurses: A systematic review. | Research (Systematic Review) | - Systematic review using CINAHL, Cochrane, PubMed, and Scopus (2006-2016)<br>- Intervention using EBP interventions designed to promote EBP among emergency nurses. (N=711) studies (N=10) selected for inclusion and quality.<br><br>-Results are presented under the PRISMA guidelines | - Interventions with face-to-face contact significant or highly significant effects on patient benefits and emergency nurse's knowledge, skills, and behavior.<br><br>- Interventions using written self-directed learning material, video, significant improvements in emergency nurse's knowledge of EBP.<br>-Reported details varied considerably between the studies | -Bias because it falls under a grey literature<br>-Desire for more randomized controlled studies for the future.<br>-Most of the studies were uncontrolled quasi-experimental | Level II Quality A |

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| 6 | Chuang, Lai, Chang, & Wan, 2018, Effects of a skill demonstration video delivered by smartphone on facilitating nursing students' skill competencies and self-confidence: A randomized controlled trial study | Research (Randomized Control Study) | -Pre-test data collected from nursing students in an intervention group (n=44) comparison group (n=43) Then, students in the intervention Intervention group downloaded the skill video onto their smartphones<br><br>Comparison group did not. Post-test data were collected at 2 weeks after the intervention | There were significant differences in students' urinary catheterization knowledge (F= 4.219, p= 0.04) Skills (F=6.739 ,p= 0.013), -No difference in confidence level (F= 2.201,p= 0.142) between the two groups after the intervention. Furthermore, the average score of the satisfaction level regarding the intervention was 4.46 (SD = 0.43) on a scale of 1 –5 | -From the same class so contamination could have occurred<br><br>Generalization needs to be considered as it was conducted at the same university. | Level I Quality A |

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| 7 | Ahmet, Gamze, Rustem, & Argut Sezen, 2018,<br>Is video-based education an effective method in surgical education? A systematic review | Research (Systematic Review) | -Systematic review performed using the Cochrane Library, Medline (PubMed), and ProQuest 2016<br>-Key words video, education, and surgery.<br>-n=9 studies used which found significance from knowledge gained used video-based education | -Video-based education has opportunity for surgical education training.<br>-Video-based education is an effective according to the recent literature.<br>-Video should be used in addition to traditional teaching techniques for surgical education.<br>-There were significant can't differences in topographical understanding ($p< 0.0001$) and in theoretical understanding ($p<0.003$) in the video only group<br>-Residents in the video scored significantly higher in total score ($p<0.002$) & overall performance score($p<0.001$) | -Heterogeneity of the studies<br>-Future studies should have blinded prospective studies and long-term follow up. | Level II Quality B |

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|---|---|---|---|---|---|---|
| 8 | Wong, Apthrorpe, Ruiz, & Nanayakkara, 2018, An innovative educational approach in using instructional videos to teach dental local anesthetic skills | Research Quasi Experimental | -Video-based educational approach in using instructional videos to teach dental local anesthetic skills<br>-Video education module provided to 2nd year students n=32 in 3 different formats<br>-Pre-& Posttest provided to access knowledge | -90% of students agreed the videos helped them to learn physical skills that required accuracy.<br>-Statistically significant correlation between how frequent the number of views of the video and the accuracy of the skill performed (r = 0.36, P= 0.05),<br>-Quiz theory and knowledge(r = 0.371,P= 0.04) | -Single convenient sample size<br>-No control group leaving the potential for contamination<br>-Determined the necessity for future research to focus on the confidence and competence. | Level II Quality A |

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| 9 | Kumar et al., 2019,A brief provider training video improves comfort with recommending the human papillomavirus vaccine | Research Qualitative | [redacted] used 3, 20-minute training video focusing on the barriers of provider administration of the HPV vaccination in pediatric practices. -Video had clinical vignettes - n=96multidisciplinary providers (including pediatric residents) N=6 pediatric sites viewed the video and completed baseline and posttest questionnaire - Assessment of the knowledge of vaccine, | 30% of pediatricians who failed to discuss HPV vaccine at the 11- to 12-year-old visit did not raise the subject because they expected parents to refuse, and 12% of pediatricians would not offer HPV vaccination again to a parent who had previously declined it -Substantial and statistically significant (P < .05) improvement in multiple areas after using the video education module -Highest scores were in knowledge and overall attitude towards vaccine | -Convenience sample -Did not evaluate the amount of vaccines of | Level III Quality A |

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| | | | attitudes, comfort with discussing vaccine were evaluated | | | |
| 10 | World Health Organization(WHO), 2015, Learning as good as traditional training for health professionals: where is the evidence? | Non-research Position statement | n/a | -Electronic learning could enable millions more students to train as medical professionals around the globe<br>-n=108 studies, showed that students acquire knowledge and skills through online and offline<br>-eLearning as can be better and just as good as traditional | n/a | Level IV Quality A |

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| | | | | teaching methods. | | |

# Appendix B

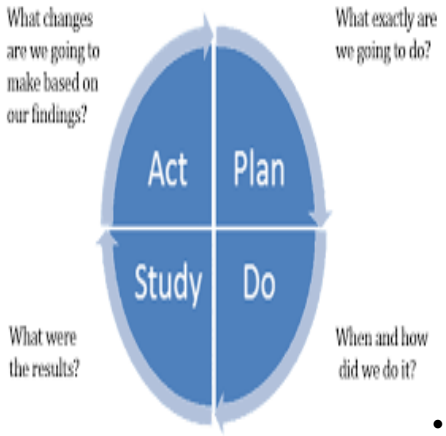
## Conceptual Framework of Theoretical Framework

**Act**

- Based on the evaluation of the surveys and analysis additional videos can be created for continuous validation and consistent use on the unit resource.

**Plan**

- methodmeth survey from staff ranking their confidence level performing ED nursing skills on a Likert Scale of 1-5 (1 being least confident 5 being most confident.
- Create instructional videos for ED skills, which provoke decreased lower levels confidence.




**Study**

- Evaluate the confidence levels of the ED nurses who used the video modules using a post-test survey using the same Likert Scale to evaluate their level of confidence.
- Paired t-test analysis to be performed for statistical significance.

**Do**

- Have ED nurses use video instructional educational modules to perform infrequently performed skill that evokes a lower level of confidence level

Adapted from: Agency for Healthcare Research and Quality. (2013).

Appendix C

Recruitment Flyer

RUTGERS
School of Nursing

## Research Project Title: Using Video Technology to Increase Emergency Department Nursing Self Confidence

**Contact Christen Cudina RN, BSN (DNP student) with any questions!**

[redacted]

65 Bergen St #1127, Newark, NJ 07107

**You are invited to participate in a 15-minute education session regarding:**

**-Using Video Technology in the ED for infrequently performed nursing skills.**

**-Increase your ED nursing confidence!**

**-Introduction to the Video Technology project guidelines of the program**

**- Explanation of the pre-intervention and post-intervention surveys that will be conducted in this quantitative study to evaluate the effectiveness of using a formalized video education module for infrequently performed Emergency Nursing skills in order to improve confidence.**

**Where: ED Breakroom**

**When: July 15th, 17th, & 19th during Shift Huddle 7a.m., 11p.m., & 7p.m.**

**Inclusion Criteria: Any ED nurse who has greater than 1 year of experience and is over the age of 18 years old!**

**Come hear about this research study that is free (no cost) to participate!**

**Gain access to two free (no cost) video modules that will take 5 minutes to watch regarding infrequently performed ED skills!**

**Only commitment required is your consent which can be withdrawn at any time!**

**Version 3 4/23/2019**

Appendix D

**Recruitment Email**

Hello!

My name is Christen Cudina and I am an RN currently in the DNP FNP Emergency Care program at Rutgers University. I am currently in the final stages of obtaining my degree of when I hope to graduate in May of 2020. I am finally about to begin my project for the doctoral portion of my degree. I have been lucky enough to have gained permission from your Nurse Manager Dr. [redacted] Hospital to implement my project in your Emergency Department! My quality improvement project requires assistance from you as the staff! My project is looking at the following concept:

Emergency Department nurses treat a variety of patient ailments and medical conditions. ED nurses must be skilled to treat multiple medical problems at any given time. However, they cannot be experts on every emergency situation. Frequent continuing education can assist with updating or reviewing certain high acuity and low frequency procedures/situations. Emergency RNs may be unfamiliar with or have not performed a procedure recently and require an immediate review of the procedure. There is no mechanism for an ED nurses to review a procedure in these situations.

More information about this study will occur at a brief information session during shift huddle in the break room before each shift during the week of July 15th , 2019. If you have any questions, please do not hesitate to reach out!

Christen Cudina BSN,RN (DNP student)

[redacted]

[redacted]

Appendix E

**RESEARCH SUBJECT CONSENT FORM**

**Title:** Using Video Technology to Increase Emergency Department Nursing Self Confidence

**Protocol No.:** Sponsor's protocol number

**Sponsor:** [redacted]

**Investigator:** [redacted]

[redacted]

[redacted] Ridgewood, NJ 07450

[redacted]

**Daytime Phone Number:** [redacted]

This consent form is part of an informed consent process for a research study and it will provide information that will help you decide whether you want to take part in this study. It is your choice to take part or not. After all of your questions have been answered and you wish to take part in the research study, you will be asked to sign this consent form. You will be given a copy of the signed form to keep. Your alternative to taking part in the research is not to take part in it.

**Who is conducting this research study and what is it about?**

You are being asked to take part in research being conducted by [redacted]. The purpose of this study is to *evaluate if using a readily* available video module can increase emergency nursing self-confidence when reviewing certain low frequency procedures/situations.

**What will I be asked to do if I take part?**

The *pre-survey and post-survey and post-post survey will* take about *five minutes* to complete it. We anticipate *25* subjects will take part in the study.

**What are the risks and/or discomforts I might experience if I take part in the study?**

*There is no anticipated discomfort for participants in this study, so risk to participants is minimal. Question participants will be asked may cause them to think about feelings or experiences that could make them feel sad or upset. Participants will be informed of any new findings that may affect their*

*decision to remain in the study.* Breach of confidentiality is a risk of harm, but a data security plan is in place to minimize such a risk. Also, some questions may make you feel uncomfortable. If that happens, you can skip those questions or withdraw from the study altogether. If you decide to quit at any time before you have finished the *survey* your answers will NOT be recorded.

**Are there any benefits to me if I choose to take part in this study?**

There no direct benefits to you for taking part in this research. You will be contributing to knowledge about *increasing Emergency Department nursing self-confidence.*

**Will I be paid to take part in this study?**

You will not be paid to take part in this study.

**How will information about me be kept private or confidential?**

All efforts will be made to keep your responses confidential, but total confidentiality cannot be guaranteed.

- We will ask you to provide *your age, sex, and year of Emergency Department nursing experience.* when you complete the *survey.* This identifiable information *will not* be stored with your responses. Instead, your responses will be assigned a subject # which will be stored separately from your responses so others will not know which responses are yours. We will securely store the key code linking your responses to your identifiable information in a separate password-protected file which will be destroyed after data analysis is complete and study findings are professionally presented or published.

No information that can identify you will appear in any professional presentation or publication.

**What will happen to information I provide in the research after the study is over?**

- After information that could identify you has been removed, de-identified responses may be used by or distributed to investigators for other research without obtaining additional informed consent from you.

**What will happen if I do not want to take part or decide later not to stay in the study?**

Your participation is voluntary. If you choose to take part now, you may change your mind and withdraw later. You may leave without turning in a completed form or by turning in a blank or incomplete form. You may also withdraw your consent for use of data you submitted, but you must do this in writing to the PI [redacted]

**Who can I call if I have questions?**

If you have questions, concerns, or complaints, or think this research has hurt you or made you sick, talk to the research team at the phone number listed above on the first page.

This research is being overseen by an Institutional Review Board ("IRB"). An IRB is a group of people who perform independent review of research studies. You may talk to them at (800) 562-4789, help@wirb.com if:

- You have questions, concerns, or complaints that are not being answered by the research team.
- You are not getting answers from the research team.
- You cannot reach the research team.
- You want to talk to someone else about the research.
- You have questions about your rights as a research subject.

Please keep this consent form if you would like a copy of it for your files.

By beginning this research, you acknowledge that you have read the information and agree to take part in the research, with the knowledge that you are free to withdraw your participation without penalty.

Appendix F

**Pre-Survey Confidence Scale**

**C-SCALE**

Directions: Circle the number which best describes how you perceive your current ability to perform care on an adult in the hospital.

(NOTE: Make sure that the circle encloses just ONE number.) Please refer to the following scale to record your answers

1 (not at all certain) 2( certain for only a few steps) 3( fairly certain for a good number of steps) 4 (certain for almost all steps) 5( absolutely certain for all steps).

1. I am certain that my performance is correct:

   1 2 3 4 5

2. I feel that I perform the task (clinical skill performed i.e. port-a cath access) without hesitation:

   1 2 3 4 5

3. My performance would convince an observer that I am competent at this task (clinical skill performed i.e. port-a cath access):
   1 2 3 4 5

4. I feel sure of myself as I perform the task (clinical skill performed i.e. port-a cath access):

   1 2 3 4 5

5. I feel satisfied with my performance:

   1 2 3 4 5

Adapted from: Confidence Scale C-Scale Grundy, (1993).

Appendix G

**Post-Survey Confidence Scale**

**C-SCALE**

Directions: Circle the number which best describes how you perceive your current ability to perform care on an adult in the hospital.

(NOTE: Make sure that the circle encloses just ONE number.) Please refer to the following scale to record your answers

1 (not at all certain) 2( certain for only a few steps) 3( fairly certain for a good number of steps) 4 (certain for almost all steps) 5( absolutely certain for all steps).

1. I am certain that my performance is correct:

   1 2 3 4 5

2. I feel that I perform the task (clinical skill performed i.e. port-a cath access) without hesitation:

   1 2 3 4 5

3. My performance would convince an observer that I am competent at this task :
   1 2 3 4 5

4. I feel sure of myself as I perform the task (clinical skill performed i.e. port-a cath access):

   1 2 3 4 5

5. I feel satisfied with my performance:

   1 2 3 4 5

Adapted from: Confidence Scale C-Scale Grundy, (1993).

Appendix H

## Post-Post-Survey Confidence Scale

## Student Satisfaction and Self-Confidence in Learning

Mark:

1 = STRONGLY DISAGREE with the statement
2 = DISAGREE with the statement
3 = UNDECIDED - you neither agree nor disagree with the statement
4 = AGREE with the statement
5=STRONGLY AGREE with statement

5 = STRONGLY AGREE with the statement

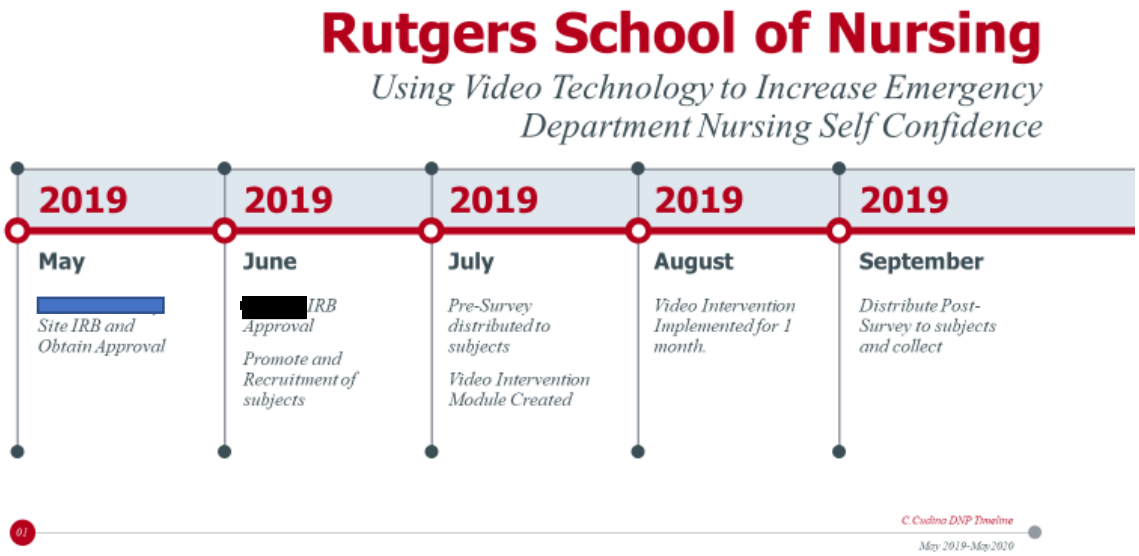
| **Satisfaction with Current Learning** | **SD** | **D** | **UN** | **A** | **SA** |
|---|---|---|---|---|---|
| 1. The teaching methods used in this simulation were helpful and effective. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 3. I enjoyed how my instructor taught the simulation. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 4. The teaching materials used in this simulation were motivating and helped me to learn. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 5. The way my instructor(s) taught the simulation was suitable to the way I learn. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| **Self-confidence in Learning** | **SD** | **D** | **UN** | **A** | **SA** |
| 6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 9. My instructors used helpful resources to teach the simulation. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 10. It is my responsibility as the student to learn what I need to know from this simulation activity. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 11. I know how to get help when I do not understand the concepts covered in the simulation. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 12. I know how to use simulation activities to learn critical aspects of these skills. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |
| 13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time.. | ○ 1 | ○ 2 | ○ 3 | ○ 4 | ○ 5 |

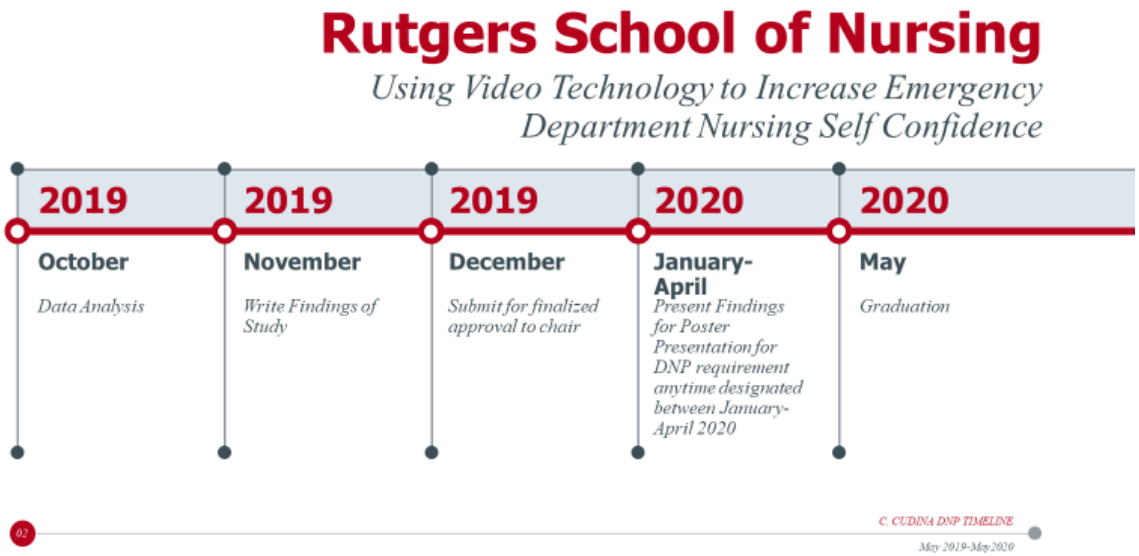
 Revised December 22, 2004

Adapted from: National League for Nursing. (2019).

Appendix I

**Timeline**



Appendix J

**Budget**

| Expense | Cost | Total |
|---|---|---|
| Recruitment Flyers | 20 @ $1.00 | $20 |
| Light Refreshments | 6 sessions @ $50 | $300 |
| Video Production | 1 video production @$250 | $250 |
| Statistician Consultation | 1 sessions @ $65/hr x1 hrs | $65 |
| Dissemination Poster for Presentation | 1 poster @ $75 | $75 |
| **Total Budget** | | **$710** |

Appendix K

## Pre & Post Test Data Analysis

### Paired Samples Statistics

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Pretest | 13.3600 | 25 | 5.17107 | 1.03421 |
| | Posttest | 19.1600 | 25 | 4.20991 | .84198 |

### Paired Samples Correlations

| | | N | Correlation | Sig. |
|---|---|---|---|---|
| Pair 1 | Pretest & Posttest | 25 | .547 | .005 |

### Statistics

mean

| | | |
|---|---|---|
| N | Valid | 25 |
| | Missing | 0 |
| Mean | | 16.2600 |

### mean

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 10.00 | 3 | 12.0 | 12.0 | 12.0 |
| | 11.00 | 1 | 4.0 | 4.0 | 16.0 |
| | 11.50 | 1 | 4.0 | 4.0 | 20.0 |
| | 12.50 | 3 | 12.0 | 12.0 | 32.0 |
| | 14.50 | 1 | 4.0 | 4.0 | 36.0 |
| | 16.00 | 2 | 8.0 | 8.0 | 44.0 |
| | 17.00 | 1 | 4.0 | 4.0 | 48.0 |
| | 17.50 | 4 | 16.0 | 16.0 | 64.0 |
| | 18.00 | 1 | 4.0 | 4.0 | 68.0 |
| | 18.50 | 2 | 8.0 | 8.0 | 76.0 |
| | 19.50 | 1 | 4.0 | 4.0 | 80.0 |
| | 20.00 | 2 | 8.0 | 8.0 | 88.0 |
| | 21.00 | 1 | 4.0 | 4.0 | 92.0 |
| | 22.50 | 1 | 4.0 | 4.0 | 96.0 |
| | 25.00 | 1 | 4.0 | 4.0 | 100.0 |
| | Total | 25 | 100.0 | 100.0 | |

Appendix L

## Program Evaluation Data Analysis

### One-Sample Statistics

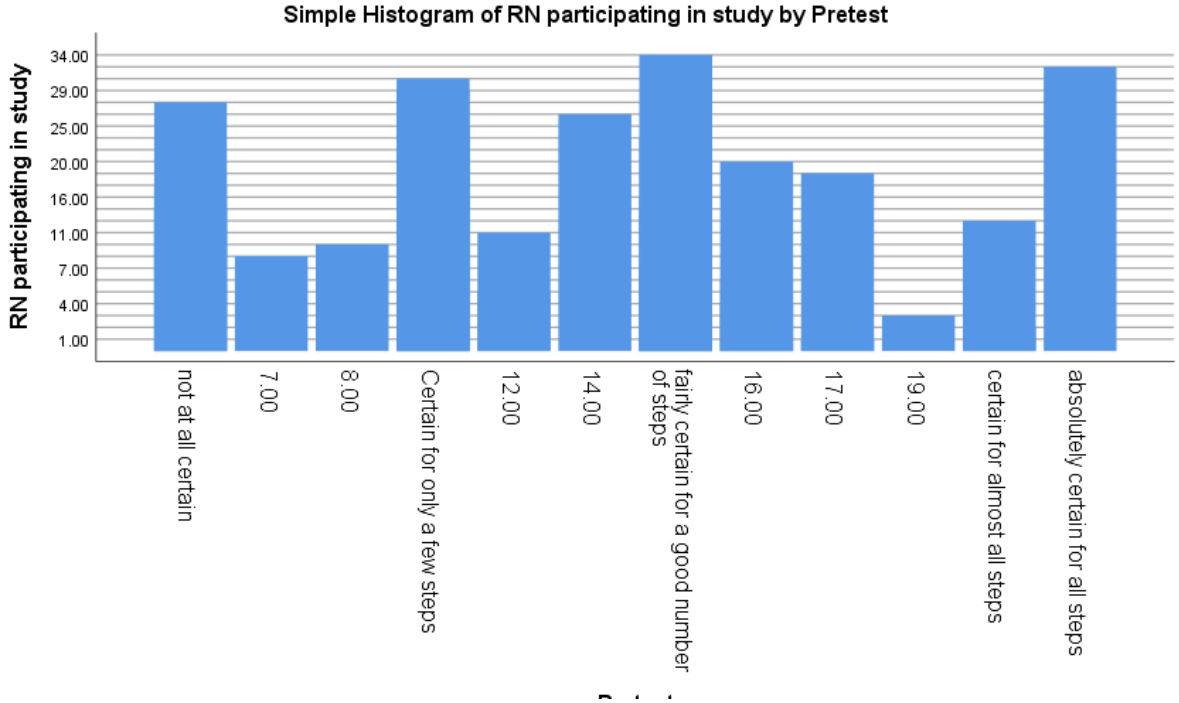
| | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|
| Evaluation of teaching program after intervention | 25 | 4.6400 | .48990 | .09798 |

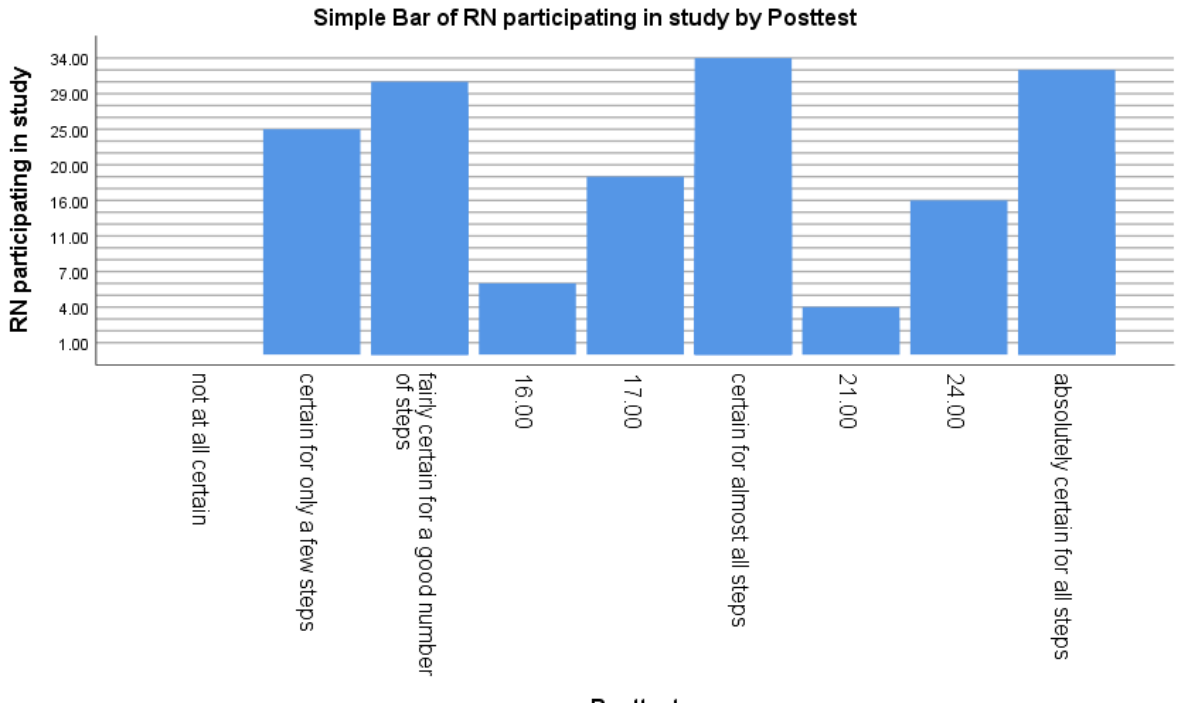
### One-Sample Test

| | Test Value = 0 | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 95% Confidence Interval of the Difference | |
| | t | df | Sig. (2-tailed) | Mean Difference | Lower | Upper |
| Evaluation of teaching program after intervention | 47.357 | 24 | .000 | 4.64000 | 4.4378 | 4.8422 |

Appendix M

**Bar Graph of Pre& Post test Data Analysis**



Appendix N

**Bar Graph of Program Evaluation Data Analysis**