IMPROVING TRIAGE AND PATIENT THROUGHPUT PROCESS WITH EMERGENCY DEPARTMENT RAPID TRIAGE PROTOCOL AND EMERGENCY SEVERITY INDEX TRAINING

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ABSTRACT

Objectives: This project aims to decrease Admission to Physician Times (ATP) to less than 30 minutes and reduce the rate of patients who leave the emergency department without being seen (LWBS) to less than 10%. By implementing an evidence-based emergency department rapid triage protocol (EDRTP), the project will decrease the length of stay/arrival to discharge (ATD) for patients with Emergency Severity Index (ESI) 4 and 5 to less than 2.5 hours. Additionally, the DNP project lead created an EDRTP oversight committee for a continuous assessment and evaluation of the EDRTP.

Methods: The project integrated quantitative methods to determine and measure the effectiveness of EDRTP and ESI training for the emergency department and staff. This task was completed with a multi-method approach, including pre-and post-training evaluation tools to assess ED staff knowledge, confidence, and beliefs about ESI Triage and EDRTP. The DNP project lead analyzed all data retrieved and collected.

Results: The DNP project outcomes produced up-to-date and evidence-based triage knowledge and skills. The EDRTP and ESI training resulted in a significant decrease in ATP, ATD (ESI-level 4&5), and LWBS rates. All DNP project objectives were met.

Conclusion: This DNP project demonstrates that emergency department leaders and staff recognize Emergency Severity Index (ESI) Triage and Emergency Department Triage Protocol to be a valuable change of practice to their current department workflow. Additionally, this project prepared nurses to identify and prioritize patients who required urgent interventions while improving the ATP times, LWBS rates, and length of stay for patients with ESI levels 4 and 5.

Key Words: Rapid Triage Protocol, Emergency Severity Index, and Emergency Department Rapid Triage Protocol

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DEDICATION

I am dedicating this research to five beloved people who have meant and continue to mean so much to me. Although one of them is no longer of this world, his memory continues to influence my life. First and foremost, to my mother, Rosalia Molina Chue. Achieving whose love for me knows no bounds and has taught me the value of hard work. Thank you so much, "Mamá." You will always be in my heart. Next, my father, Santos Molina, who passed away while completing my doctoral studies. I will never forget your last words, "I'm so proud of you and your love for your family." I miss you, "Papá." May you find peace and happiness in God's hands.

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Doctor of Nursing Practice Project Overview

Background

Emergency departments (EDs) are the primary entry point into hospitals for acutely ill or injured patients. When patients arrive at the ED, the expectation is that they will be prioritized according to the current emergency severity index (ESI) triage system. After they are assessed and treated in the ED, they are admitted to the hospital for further treatment or discharged. Staff in the ED must be trained to care for patients safely and quickly by assessing them and expediting access to appropriate care areas. The challenges of patient flow in EDs have been the subject of various studies, which often emphasize delayed care and the consequential impairment of patient safety (Asheim et al., 2019). Furthermore, acutely ill or injured patients with high ESI scores who present to the ED during high patient volume times can overwhelm resources and delay ED throughput times. Increased ED patient volumes and overcrowding have been identified as patient safety issues and worldwide public health problems, hence the urgency to address challenges (Morley et al., 2018).

Problem Statement

Delayed ED throughput and overcrowding are linked to poor patient outcomes and deficits in service quality (El Sayed et al., 2015). Furthermore, delayed ED throughput significantly affects patient satisfaction, treatment times, and rates of patients who leave without being seen (LWBS). From a service quality standpoint, arrival-to-provider (ATP) time is a significant predictor of patient satisfaction (El Sayed et al., 2015). Multiple factors influence ED throughput, including accurate triage, bed availability, high patient volumes, patient acuity, high inpatient census, and untrained staff floating to the ED. In the United States, ED overcrowding and the financial burden on healthcare organizations have imposed tremendous pressure on the

healthcare system to identify safe and appropriate care processes for ED patients. These challenges present an opportunity to develop secure patient throughput management, rapid triage, proper patient triage prioritization, and effective triage protocols in EDs to improve patient care, outcomes, and survival (Robertson-Steel, 2006).

The triage process at the project site was not guided by an evidence-based protocol, resulting in a triage process that varied widely depending on the staff. The ED leadership team identified this factor as a possible cause of increased LWBS rates and delayed triage times. The site leadership reported that LWBS rates, ATP times, and length of stay (LOS) for patients with ESI levels 4 and 5 had increased consistently in the previous three years (2016-2019), and the LWBS percentage had fluctuated from 2.0% to 10%–15% per month (T. Miller, personal communication, April 2019). In comparison, the national benchmark for LWBS rates in the ED is 2% (Hayden et al., 2014). In addition, the average ATP time for this hospital had consistently increased over the previous five years, from 40 to 65 min (T. Miller, personal communication, April 2019). According to Reiter (n.d.), the national average ATP time for a community hospital is 37.3 minutes. Achieving this time with consistency ensures patient satisfaction and provides high-quality care (Al-Abri & Al-Balushi, 2014).

Purpose

This project aimed to decrease the ATP time to less than 30 min, the patient LWBS rate to less than 10%, and the LOS for nonurgent patients (ESI levels 4 and 5) to less than 1 hr. This project involved the development and implementation of an evidence-based emergency department rapid triage protocol (EDRTP) and ESI training. Additionally, an oversight EDRTP committee composed of staff members was created to assess and evaluate the EDRTP and project sustainability. The EDRTP committee worked with the ED leadership team, including

ED nursing management, charge nurses, and provider leaders. Evidence-based practices show that rapid emergency triage processes can significantly improve ED metrics and patient satisfaction (Hing & Rui, 2016). Although evidence-based practices show that rapid emergency triage processes can dramatically improve patient satisfaction (Hing & Rui, 2016), this aspect was not examined because of time and resource limitations.

Objectives

In the timeframe for this DNP project, this initiative aimed to achieve the following:

1. Provide EDRTP and ESI education and training for multidisciplinary staff before implementing the DNP Project.
2. Implement the EDRTP.
3. Decrease patient ATP times to less than 30 min.
4. Decrease the number of LWBS patients to less than 10%.
5. Decrease patient arrival-to-discharge (ATD) time for ESI levels 4 and 5 to less than 2.5 hr.
6. Organize an EDRTP multidisciplinary oversight committee for project assessment and reassessment.

Desired Outcomes

The project's short-term goal was to provide training for and implement an ESI triage protocol and EDRTP to improve ED metrics and patient throughput. To implement and sustain the use and desired outcomes of the ESI protocol and EDRTP, the project's long-term goals included annual training to promote knowledge and skill development, triage competency, and ED team collaboration.

Study Significance in Nursing and Healthcare

Nurses are at the forefront of changing healthcare by adopting up-to-date ED triage practices to help patients receive rapid, accurate, and high-quality emergency care. This

commitment to improving nursing practices and patient outcomes aligns with improving ED wait times and decreasing LWBS rates. Patient wait times, LWBS, and ATP time in the ED are vital indicators of ED overcrowding, affecting patient throughput and timely access to care (Hing & Rui, 2016). Given that ED overcrowding is linked to increased LOS, inpatient mortality, and hospital costs for admitted patients, high importance is placed on improving triage times in EDs (Hing & Rui, 2016).

The nursing profession is based on evidence that requires high information literacy to perform skills to enhance patient outcomes. Therefore, translating current evidence-based practice for a rapid ED triage assessment can result in safe and prompt patient care (Marino et al., 2015). In addition, fast and accurate ED triage significantly influences the quality of patient care by reducing the time from arrival to seeing a medical professional and increasing the nursing staff's confidence to meet patients' needs.

Implementing an EDRTP at this facility significantly transformed the ED triage nurse's role into a leader. Previous research has shown that developing protocols like the one used in this project empowered nurses to provide timely assessments with diagnostic and therapeutic interventions in patient triage practice (Jarvis, 2016). One study investigated whether the combined doctor and nurse triage can lead to a faster provider assessment and treatment and found a compelling decrease in triage, ATP, and arrival to radiology times. The impact of an effective interdisciplinary ED triage team and rapid triage process significantly improved triage times and access to immediate care. Experienced doctor-nurse triage teams have also been reported to be an effective way to shorten ED waiting times (Schubash et al. 2004).

Plan and Scope of the Project

The project's plan and scope were to provide a safe learning environment and deliver ESI triage and EDRTP training. This plan aimed to improve triage timing and quality while improving ED patient metrics as outlined in the project objectives. The EDRTP and ESI training program was developed using various methodologies, including research, classroom training, case studies, testing, and question and answer formats. The EDRTP (Appendix A) included assigning a registered nurse (RN), emergency medical technician (EMT), and ED provider to the triage area to expedite the triage process and ATP time. Additionally, the DNP leader created an EDRTP oversight committee for project sustainability. This committee agreed to continue chart reviews, annual staff updates, new staff onboarding education, and EDRTP and ESI inclusion in the triage policy.

Environmental Context

The healthcare practice environment of the ED refers to the people and physical factors in settings where patient care is provided. The ED patient triage environment, where patient care frequently begins, is busy and sometimes noisy. Workplace distractions and task disruptions are familiar in an already-crowded ED environment. At this community hospital, the ED had encountered various triage and patient throughput challenges. The ED leaders have found difficulties with increased LWBS rates, ATP times, LOS, and patient sentinel events. (T. Miller, personal communication, 2019). Moreover, the national benchmark for patient LWBS in the ED is 2% (Hayden et al., 2014). The previous protocol at this hospital regarding patient LWBS was to reassess patients, notify the charge nurse, and attempt to convince a patient to stay or sign an against medical advice (AMA) form. Unfortunately, that protocol increased patient wait times to see a provider, which did not help reduce LWBS rates.

Setting. The project took place at a community hospital ED in urban California. This ED is a 28-bed unit that sees approximately 110 patients daily. The ED layout includes seven private rooms and ten semiprivate beds. These facilities include two rooms with cardiac monitoring capability, one private room with negative pressure, two triage rooms, and one small ophthalmology room. The ED had used the same triage process for more than ten years. Patient triage took place in one of the two triage rooms next to the ED front entrance. The DNP project used the same ED space layout to assign a nurse, EMT, and provider to triage for rapid and effective triage. According to Eitel et al. (2010), strategic, fast, and effective triage impacts patient outcomes while improving patient flow and satisfaction.

SWOT/Risk Analysis

The project lead completed a SWOT analysis to assess the strengths and weaknesses of the community hospital ED used for this project (Table 1). This analysis was directly related to training and implementing a protocol to improve triage care, competency, standardization, and ED throughput. In addition, to ensure the DNP project met the needs of the ED nurses, the SWOT analysis results were discussed with the ED stakeholders in April 2019.

Table 1 SWOT Analysis

	STRENGTHS	**WEAKNESSES**
Internal Analysis	Experienced staff The knowledgeable and cohesivemanagement team Supportive ED management team	Allocation of funding to complete training Challenges with scheduling ED staff while maintaining 24-hour staffing for the department Space to accommodate classes for all training dates
	OPPORTUNITIES	**THREATS**
External Analysis	Partnership with nursing and medical leaders Collaboration and connection with other hospital departments	Participation of ED staff in completing training over four weeks

Faith Integration and Theoretical Framework

Biblical Worldview

Greenleaf (1977) developed the concept of servant leadership, which describes the natural feeling that one wants to serve, to serve first rather than one who leads. The practice of servant leadership is a message Jesus Christ sends to the world" "For even the Son of Man came not to be served but to serve, and to give his life as a ransom for many" (New International Version Bible, 1973, Mark 10:45). Servant leaders feel a profound duty of stewardship toward others: this can be coworkers, an organization, or, most importantly, patients. Servant leadership builds camaraderie and trust within teams. Research shows that the servant leadership approach to management focuses on serving people with collaboration, mutual trust, and empathy (Jones et al., 2018). An ED is an ideal environment for both leaders and ED staff to practice servant leadership. Jesus taught that true leaders must be compassionate, sacrificial, humble, caring, and sincere. Examples of complete servant leaders are staff who assist a patient in a wheelchair or transfer a patient to a bed. The triage nurses and providers who reassure patients and their families do everything possible to help them. "In Matthew 11:29-30,

"Take my yoke upon you and learn from me, for I am gentle and humble in heart, and you will find rest for your souls. For my yoke is easy, and my burden is light" (NIV). Jesus consistently provided reassurance and empathy, and he was intentional in his communication to provide mercy, compassion, patience, and reassurance. Similarly, the ED staff members have an opportunity to provide Christ-like care to patients by helping patients and their families in a way that eases their troubled hearts and bodies.

Theoretical Framework

Implementing a change in practice requires planning, focus, and a collective effort to guarantee successful results (Mitchell, 2013). Implementation processes often benefit from theoretical approaches to clarify how and why a project may succeed or fail. The theory selected to guide this project is John Kotter's change theory (Appendix D), and this approach explores eight steps to achieving an effective and lasting change (Kotter, 2007). This theory aligns with the project's objective, from creating a sense of urgency and change in ED triage processes to embracing an evidence-based practice that leads to cultural change. In Table 2, the steps of Kotter's theory are applied to this DNP project.

Table 2 Kotter's' Theory of Change and Project Application

1. Create a sense of urgency for new training and policies to decrease LWBS and any patient leaving against medical advice (AMA).
2. Build a guiding team for the EDRTP and ESI to gain change buy-in.
3. Develop a change vision for the ED team and strategy to adopt evidence-based practices as part of their current practice.
4. Create understanding and buy-in by providing consistent and clear communication about the EDRTP and ESI as up-to-date practices to improve the triage process and ED metrics.
5. Remove obstacles and empower the ED team by providing EDRTP and ESI tools and training and facilitating participation.
6. Create short-term wins that include achieving 90% of the staff training and project implementation during the COVID-19 pandemic.
7. Generate consistent and continuous support for the ED staff by the ED stakeholders, EDRTP oversight committee, and project leader.
8. Create a culture that embraces up-to-date practices and changes to improve ED throughput.

Literature Review and Evidence Synthesis

The first step of the literature review was using multiple online search engines and library databases. A systematic review of the literature was conducted using the following databases:

PubMed, Medline, Cumulative Index for Nursing and Allied Health (CINAHL), UpToDate Anywhere, Wiley Online Library, and all EBSCOhost databases (Academic Search Premier, Business Source Premier, CINAHL with Full Text, eBook Collection). The initial keywords used in the search included physician in triage, pivot nurse, reducing arrival-to physician time, decreasing the door to provider in the emergency department, rapid triage, triage safety, physician and advanced providers in triage, emergency department throughput, emergency department overcrowding, and improving ED flow. The literature search revealed multiple articles supporting ESI education and training, rapid triage assessment processes, and up-to-date triage practices to help ED staff prioritize and manage a patient assessment in triage.

Search Results

The initial focus of the literature review was to identify scholarly reviewed journals, peer-reviewed articles, books, and archived documents. The keywords mentioned above were used for all databases searches. Medline, Wiley Online Library, CINAHL, and UpToDate produced 800 results, EBSCOhost database search produced 12,528 results; the Medline search produced 1,112 results, and the PubMed search produced 1,582 results. The search for articles about nurses and physicians in triage yielded 1,100 results. Further focusing on reducing arrival-to-provider time, decreasing the door to provider in the emergency department, improving ED throughput, rapid triage assessment, and triage protocols generated 1,500 results. The DNP leader reviewed 75 studies that improved triage assessment times and ED throughput published within the past five years. Furthermore, the 75 studies were selected by research that addressed rapid triage protocols, triage training, provider in triage, and decreasing ED metrics.

The trend identified in the literature search provided evidence that the overcrowding of EDs is negatively impacting care quality (Morley et al., 2018). Additionally, the search results

identified the following strategies that have been shown to improve patient throughput and ensure quality patient care by focusing on the triage area: bypassing the triage process when beds are available within the department, having a rapid intake process, placing a provider in triage, offering triage education, implementing nursing protocols, and predicting inpatient beds at triage (Emergency Nurses Association, 2017).

Benchmarks and Supporting Data

The literature review shows ample evidence on evidence-based methods that improve ED patient flow and ensure quality care in the ED. The methods include customary triage, triage process bypass when beds are available within the department, ESI triage, triage training, rapid intake, presence of a provider in triage, and nurse-driven treatment protocols. Furthermore, according to the Emergency Nurses Association (2017), implementing these methods has shown promising improvements in the ED environment.

Triage Training. Emergency nurses' knowledge and skills are crucial for quality nursing care in EDs, which are vital hospital environments that aim to provide the best care possible in the shortest time. For this reason, Kerie et al. (2018) reported that a positive relationship exists between triage knowledge, clinical practice, and emergency nursing care. Furthermore, to enhance the knowledge and practice of triage in EDs, according to Phukubye et al. (2021), it is vital to include continual training, triage courses and protocols, and benchmarks for different EDs.

Customary Triage Process. Typical triage processes include a pivot nurse, the first healthcare professional that a patient meets when entering the emergency department. The pivot nurse's role is to welcome patients, complete rapid patient assessments, and decide whether the patient needs immediate intervention (Christensen et al., 2016).

Emergency Severity Index. The most common triage standard is the ESI (Christensen et al., 2016), which is based on the patient's severity level and has a classification rating from 1 to 5. Level 1 identifies the highest severity level and level 5 the lowest severity. The ESI triage algorithm assists nurses with determining a patient's acuity level (Appendix C). The average ESI levels seen in EDs are 3 and 4. Implementing pivot nurses and ESI triage procedures have improved ED metrics across the United States (citation). Studies have shown that enhancing the intake process improves ED throughput, and pivot nursing helps prioritize patient triage and assessment (Christensen et al., 2016).

A study examining an ED with sentinel events due to care delays, long wait times and inefficient triage process showed that implementing a pivot nurse and ESI triage procedures improved ED metrics (Chmielewski et al., 2021). Another study showed that enhancing the intake process improved ED throughput, and pivot nursing helped the ED of a large hospital prioritize patient triage and assessment (Christensen et al., 2016).

Bypassing the Triage Process and Placing a Provider in Triage. Several studies have discussed the beneficial effects of bypassing triage. According to Marino et al. (2015), bypassing the triage process when beds are available allows for immediate bedding. It improves arrival-to-triage time, arrival-to-bed time, and arrival-to-provider time while improving patient and family satisfaction. Another study described how direct bedding and bypassing triage positively affected ED throughput metrics (ATP, arrival-to-discharge (ATD), and LWBS) when implemented in a large community ED (Marino et al., 2015). These investigators included a multidisciplinary team that assessed the patient. They found a drop in the median arrival-to-bed time, arrival-to-physician time, and arrival-to-discharge metrics. Spencer et al. (2019) found similar results in a

quality improvement initiative that included a provider in triage to reduce LWBS, LOS, and wait times to see a provider and improve patient satisfaction. The ATP time decreased from 56 min to 13 min, and the percentage of patients with LWBS decreased from 12% to 1.62%, indicating that the evidence-based practice of provider-in-triage can positively affect throughput in the ED.

Implementing Nurse-Driven Treatment Protocols. Standing orders and advanced protocols have been effective in improving safety while accelerating patient care (Gurney et al., 2015). In addition, nurse-driven protocols aim to expedite medical decision-making and decrease LOS (Hwang et al., 2016). Hwang et al. (2016) conducted a retrospective cohort study that examined the results of a change in practice in which a nurse-driven treatment protocol was implemented to address patients with chest pain who could not receive immediate medical screening by a provider. After implementing the new protocol with standing orders, the median provider evaluation to disposition time for patients with chest pain decreased from 154 min to 128 min (Hwang et al., 2016).

Emergency Department Rapid Triage Protocol. The proposal to expedite triage times and improve times can be addressed by implementing an EDRTP. Rapid ED triage requires a quick assessment of patients arriving at the ED (Henning et al., 2016). In a study examining a rapid triage assessment process, Twanmoh (2005) found that the new process improved arrival-to-triage, arrival-to-bed, and arrival-to-physician times while improving patient satisfaction. The arrival-to-bed times decreased from 36 min to 20 min for 97% of the occurrences. The ATP time decreased from 60 min to 40 min or less 82% of the time, and the average LOS decreased from 120 min to 70 min.

Methods and Implementation

Project Design

The DNP project leader measured the ED staff members' knowledge, confidence, and beliefs about ESI triage and the EDRTP (Appendix A) before and after the course. To obtain pre- and post-education data, a 5-point Likert scale was used in accordance with quantitative evaluation methods. Additionally, the DNP project leader monitored education distribution and collected pre-and post-course evaluations. The collected data were entered into a Microsoft Excel spreadsheet and analyzed.

This project follows a quality improvement (QI) approach; QI is a concept often utilized in healthcare because it embraces the goals of providing patients with high-quality, safe, timely, effective, efficient, equitable, and patient-centered care (Lopes Sauers et al., 2017). In addition to identifying a goal or purpose, the QI process involves formulating an intervention for change, defining success metrics, and putting a plan into action (Agency for Healthcare Research and Quality, 2017). The procedures for this project included chart review, pre-and post- ESI, and EDRTP training to measure goal success (Appendix E). The goal of improving ATP and ATD (for ESI levels 4 and 5) aligns with improving patient safety and timely patient care.

Population and Sampling

The direct population for the DNP project included 100 registered nurses, 8 EMTs, 18 physicians, and 14 ED receptionists. The average clinical experience for registered nurses and physicians varied from 3 to 28 years (T. Miller, personal communication, April 2019). The educational background of the nursing staff was as follows 55% with an RN Diploma, 20% with an associate degree in nursing, 20% with a bachelor's degree in nursing, and 5% with a Masters of science degree in nursing. (T. Miller, personal communication, April 2019). The indirect

population included all the patients registered in the ED and seen by the ED provider during the study period. The patient registration process that was already in place was used for this project. The patient's identities were protected, as no patient identifiers were utilized.

Data Collection

In October 2019, the DNP project lead and ED stakeholders completed a strategic project plan during the first planning meeting. They initiated an assessment of the emergency department's current practices, opportunities, and limitations. In addition, the DNP lead reviewed and analyzed the data from the pre-and post-project training and implementation sections of the project. The results were presented to ED stakeholders in February 2021.

The project data collection followed sections of the existing ED metrics dashboard, extracted from each emergency health record (EHR), and provided daily performance trends that the leaders could track and evaluate. The project used these data to analyze ATD, ATP, LOS for ESI 4 and 5, and LWBS rates. The DNP project leader completed chart reviews using a data validation tool (Appendix B) before and after project implementation (Appendix E). The chart review process included 25 charts before project implementation and 25 charts after completion. The stakeholders agreed to utilize the EDRTP Monday through Friday from 9:00 a.m. to 11:00 p.m. to provide adequate monitoring and support to the staff during the transition to the new protocol. Furthermore, to evaluate EDRTP outcomes, it was agreed that the DNP project leader would assess charts from 3:00 p.m. to 11:00 p.m. after project implementation to capture data during the busiest times in the ED. After the data were gathered and the analysis completed, the DNP project leader presented the results and overall project performance to the oversight committee and ED leaders.

Data Collection Tools. The data collection tools included the following: ESI pre-and post-training evaluation tools and pre-and post-project implementation chart reviews (Appendix C). The chart validation tool (Appendix B) included the patient's date and time of arrival, RN initials, charge nurse initials, ESI acuity level, and DNP project metrics (Appendix D). Each participant signed up for the project, and the project leader kept a copy of the sign-in sheets for all participants. The DNP lead administered and retrieved evaluation tools from each participant in the project. The pre-and post-training evaluation tools collected quantitative data on participants' perceived EDRTP and ESI training efficiency. After the project was completed, evaluations and sign-in sheets were given to the education department as per the standard hospital process. The outcome measures, instruments, and data collection points are listed in Table 3.

Table 3 Data Collection Methods for Outcome Measures

Outcome Measures	Instruments	Data Collection Points	Data Analysis
Number of ED staff completing EDRTP training,	Sign-in sheets; pre- and post-training evaluation tools	Immediately before and after EDRTP training; before project implementation,	Quantitative statistics and simple data summaries
Number of ED staff continuing after EDRTP training and who received ESI training	Sign-in sheets; pre- and post-training evaluation tools	Immediately before and after ESI training; before project implementation	Quantitative statistics and simple data summaries
LWBS rate, ATP time, and ATD times for ESI levels 4 & 5	Chart review tool (25 charts)	One week before training, pre-project implementation, post-training, and six weeks post-implementation	Quantitative statistics and simple data summaries, including interquartile ranges

Tools and Instrumentation

Quality improvement tools are standalone strategies or processes that can help people understand, analyze, or communicate about QI projects (Beaudry et al., 2014). However, these tools and processes must be used appropriately to achieve and maintain strong performance (Beaudry et al., 2014). The assessment for this project revealed the need for the tools and instrumentation listed in Appendix C. These tools assisted in completing the EDRTP and ESI training to improve the ED triage process. The DNP lead developed an EDRTP algorithm (Appendix G) for the ED staff. In addition, an ESI badge buddy (Appendix H) was given to the ED staff.

Evaluation Methods

Information was extracted from the ESI and EDRTP evaluation tools given to ED staff to assess knowledge, confidence, and beliefs. In addition, data were extracted through chart reviews before and after ESI and EDRTP implementation. The information was entered into a Microsoft Excel format to allow for statistical analysis of pre-and post-training data and pre-and-post-EDRTP data.

Project Data Evaluation. The data analysis for this project aimed to determine the effectiveness of implementing an EDRTP in improving ATP times, LWBS rates, and ATD times for ESI levels 4 and 5. In addition, the DNP lead implemented an ESI staff training following the ESI evidence-based practices. Providing ESI training can improve staff triage knowledge and effectiveness Kerie et al. (2018). The pre-and post-project implementation data were collected and evaluated. The post-project implementation data was trended over six weeks, focusing on the same objectives highlighted for this project (ATP, LWBS, LOS for patients with ESI levels 4 and 5).

During the analysis phase of the project, the DNP leader entered data from the ESI and EDRTP **e**valuation tool and chart review into a Microsoft Excel format. The DNP leader completed 25 random chart reviews of ED visits before and six weeks after project implementation. The analysis metrics collected during the chart review included average ATP time, ATD time for ESI levels 4 and 5, and LWBS rate. Interquartile ranges (IQRs) were used to analyze data by finding the median values of the lower and upper half of ATP time, ATD time for ESI levels 4 and 5, and LWBS rates.

Timeline

The project timeline consisted of 8 weeks, including two weeks of ESI and EDRTP staff training. The goal was to train 100% of the ED staff over two weeks. Each week, two training days were offered, and each day included a morning and evening session. The EDRTP go-live was scheduled for the week after 75% of the ED staff members were trained (See Appendix I).

The EDRTP and ESI training was administered to 95% of the ED staff within two weeks. The project go-live was completed in the third week. ED managers were available to support ED staff before and after project implementation. In addition, the DNP project lead and ED assistant directors huddled at the end of each week and addressed issues and concerns. At the end of the eighth week, the data analysis and results were presented to the ED leaders and oversight committee.

Marketing Plan

The marketing strategies included the ED leaders and the DNP lead maintained consistent communication about project planning, strategies, meetings, updates, reminders, and soliciting feedback via emails, flyers, huddles, project meetings, staff debriefing, leadership rounds, handouts, and postings throughout the ED. Project flyers were emailed to all ED staff to enhance

nurse participation. In addition, reminders about the training and the dates were posted in the unit and emailed to ED staff.

Protection of Human Subjects

Quality improvement projects must be sensitive to the rights and interests of patients, and they must be implemented ethically. The ethical dimensions of QI projects are not precise, and ethical issues can arise because improving the quality of care for some patients may inadvertently harm or benefit other patients. From the initial planning stage and throughout the execution and dissemination of this project, patients and interests were considered. The participants' rights, privacy, and safety must be prioritized over other factors in the research process. (Al Tajir, 2018).

This data generated as part of this QI project did not include any patient identifiers or markers. Furthermore, the project was not expected to negatively impact the ED staff, patients, or others associated with the ED. The project was expected to improve ED throughput and ED metrics. The DNP project leader submitted an Institutional Review Board (IRB) application to California Baptist University (CBU). The IRB determined that this project fell under the QI project category and did not require IRB approval.

Finances and Available Resources

Resources

The DNP lead, ED administrators, and ED chief discussed cost and budgetary responsibilities early on during the project assessment and planning phase. The ED director recommended that the project training be part of standard annual ED education and training timeslots. The budget for the annual ED education was already approved and allowed for 8 hours per employee and 32 hrs. to provide training to all employees. The previously allotted time for

annual ED education and updates was agreed upon. The DNP lead suggested that the entire 32 hrs. be dedicated to this training to be effective. The ED director decided not to add other ED education to the training. The education department at the hospital provided the physical location for training, and the ED administration covered the costs of supplies, posters, and handouts.

Rationale for Resources, Revenues, and Expenditures

The project's minimal cost was a significant benefit of the EDRTP and ESI training project. The DNP lead developed a revenue and expense worksheet (Appendix J) to demonstrate that the project could be completed in 4 days (8 hr per day). There was no added cost for the lead trainer, as the DNP leader developed a PowerPoint presentation (Appendix K) and provided the ESI and EDRTP training. Moreover, the ED director authorized the use of the preapproved annual education budget; thus, neither the ED nor the hospital incurred added costs or required new funding for this training. The approximate cost of 6,000 dollars was listed on the expense and revenue worksheet for comparison purposes only (Appendix J). However, the project's cost compared with the price of saving multiple lives cannot be calculated with monetary amounts. The impact of rapid, safe, and effective triage that benefits patients, communities, and organizations can have positive exponential benefits (Appendix J).

Budget Outline and Funding Sources. The preapproved annual ED education fund covered the estimated costs of this training project. Therefore, neither the ED nor the hospital incurred added charges or required new funding for this training.

Results and Outcomes Analysis

The objectives of this project were to decrease the ATP time to less than 30 min and decrease the patient LWBS rate to less than 10%. In addition, the project aimed to reduce the ATD time for patients with ESI 4 and 5 by implementing an evidence-based EDRTP. Data were

collected before and after implementation to assess the EDRTP and ESI training program outcomes, including pre-and post-training evaluation tools and chart review. Pre- and post-evaluation results were analyzed using descriptive analysis, including means, standard deviations, and IQRs. An IQR measures the spread of the middle half of a dataset, providing the range for the middle 50% of a sample. In this study, the IQRs evaluated significant differences between the two paired scaled variables, such as the pre-and post-evaluation tool results and the pre-and post-implementation chart review findings.

Project Results and Analysis

A total of 104 ED staff members participated in the EDRTP, and 90 participated in the ESI training. Because 14 participants were nonclinical staff, they were not required to complete the ESI or EDRTP survey. Therefore, 90 staff members were included in the data analysis. The data were analyzed using quantitative statistics and summaries, such as means, standard deviations, and IQRs.

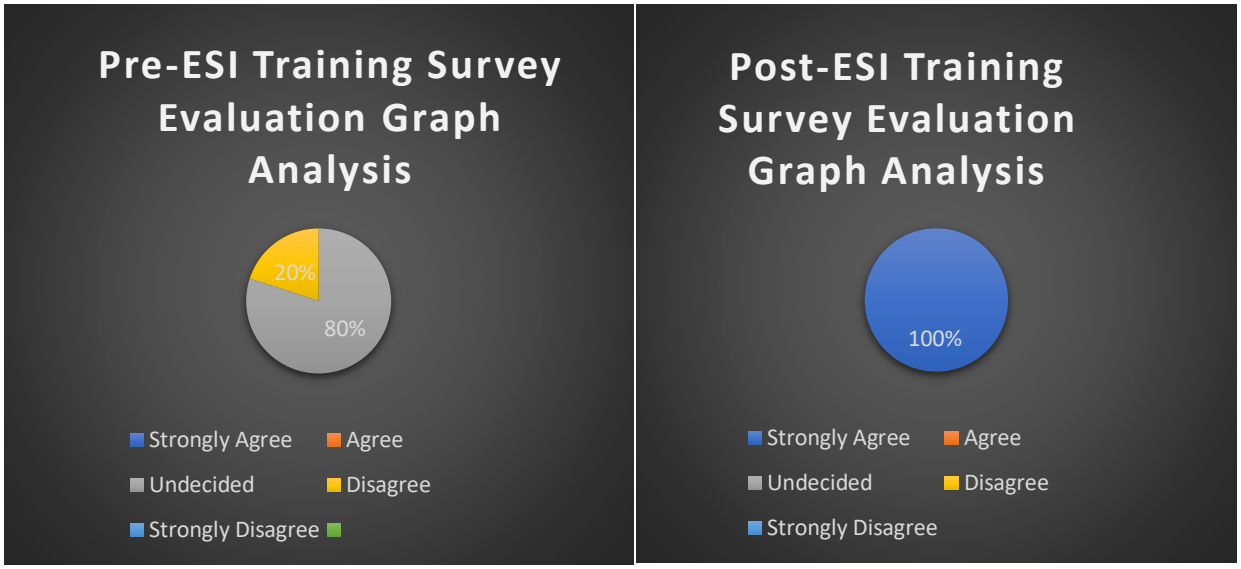
Pre- and Post-ESI Training Survey Analysis. The comparison of participants' pre-and post-training survey scores (Appendix I) indicated that they gained knowledge in ESI triage and EDRTP following the education and training. As highlighted in Table 4, in the sample of 90 nurse participants, the mean pre-training value was 2.66, and the mean post-training value was 5.0, or *highly effective* on a 5-point Likert scale (Table 4).

Table 4 Pre- and Post-ESI Survey Data Analysis

Means and standard deviation for pre and post ESI training		
Variable	Mean	Standard Deviation
Pre- ESI	2.66	0.47
Post- ESI	5.0	0

The significant increase in knowledge and awareness from the ESI training is highlighted in Figure 1, demonstrating that the ESI training was highly effective for the 90 ED staff members. The DNP lead and ED stakeholders agreed that the success of this training was due to the extensive time front-loading (hospital policy research, ED clinical rounds, meetings with hospital leaders, literature review, informal employee interviews, and time spent during ED flow observations), the work of this project, and communicating the focus on learning, not perfection. The DNP lead worked extensively on planning, gathering baseline data, processing observations, choosing and organizing the team, and communicating consistently with staff and ED leaders.

Figure 1 Pre- and Post-ESI Survey Graph Analyses



Pre- and Post-EDRTP Training Data Analysis. The data analysis of the EDRTP survey score (Appendix J) revealed a significant increase in ED staff knowledge. Staff also embraced the up-to-date practices that benefit patient outcomes and partnership among ED staff stakeholders. The EDRTP survey (Appendix J) showed that the ED staff rated the EDRTP at a mean value of 2.88 before training and at a mean value of 5.0 after training (Table 5).

Table 5 Pre- and Post-EDRTP Survey Data Analysis

Means and standard deviation for pre and post EDRTP training		
Variable	Mean	Standard Deviation
Pre-EDRTP	2.88	1.19
Post-EDRTP	5.0	0

Moreover, the EDRTP survey scores revealed that the ED staff strongly agreed to embrace the EDRTP protocol as an EBP (Figure 2).

Figure 2 Pre- and Post-EDRTP Training Graph Analysis

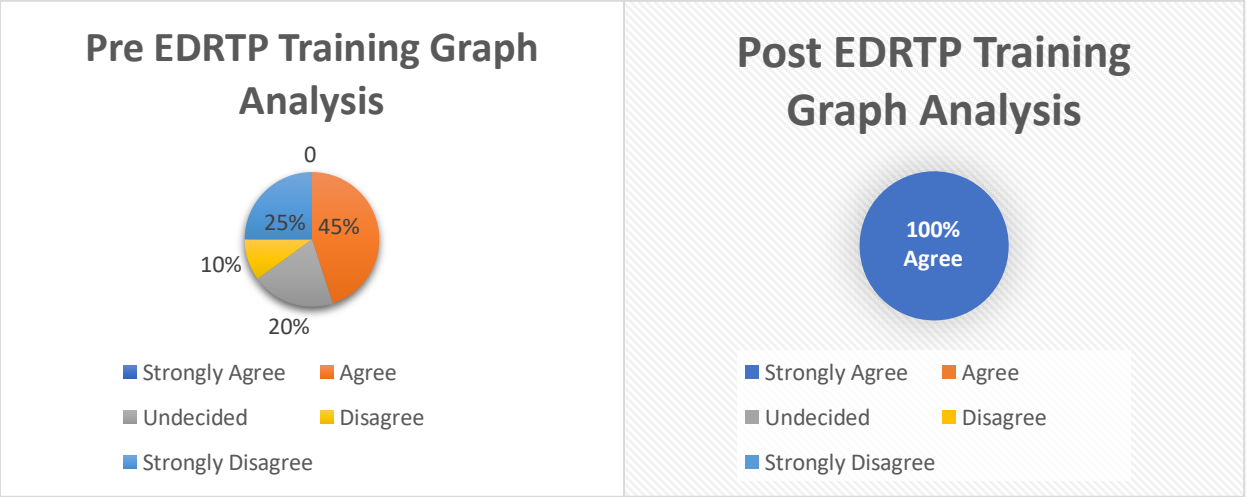


Chart Review Data Analysis for Pre- and Post-EDRTP Protocol Implementation.

The data showed a decrease in ATP time from 55.52 min to a mean of 19.48 min. The LOS for ESI levels 4 and 5 decreased from 152.69 min to a mean of 19.48 min. Additionally, the LWBS rate dropped from 4 patients to 1 patient in an 8-hr period (Table 6).

Table 6 Chart Review Data Analysis for Pre- and Post-EDRTP Implementation

Pre-EDRTP Implementation						
Variable	**Mean**	**Median**	**Standard Deviation**	**IQR**		
				Q1	**Q2**	**Q3**
ATP	**55.52 min**	**60 min**	**19.43629594 min**	**42.5**	**60**	**73.5**
LOS (ESI 4, 5)	**152.69 min**	**155 min**	**13.532778 min**	**140**	**155**	**160**
LWBS	**4 patients in 8 hr**					
Post-EDRTP Implementation						
Variable	**Mean**	**Median**	**Standard Deviation**	**IQR**		
				Q1	**Q2**	**Q3**
ATP	**19.48 min**	**20**	**3.910101918 min**	**15**	**20**	**22.5**
LOS (ESI 4, 5)	**71.5 min**	**72.5**	**4.5 min**	**70**	**72.5**	**75**
LWBS	**1 patient in 8 hr**					

The success of this project was influenced by multiple factors, such as the staff and stakeholders' engagement and experience. Moreover, the communication and clearly defined strategies and expectations helped this project meet its objectives. The data obtained from chart review generated data summaries about chart reviews pre-and post-project implementation. The data were analyzed for central tendency (different values), variability, and frequency of data

results. Figure 3 shows the decrease in ATP from 60 min to 20 min and LOS times from 140 min to 75 min (after EDRTP protocol implementation) is statistically significant.

Figure 3 ATP and LOS Times Pre- and Post-EDRTP Protocol Implementation

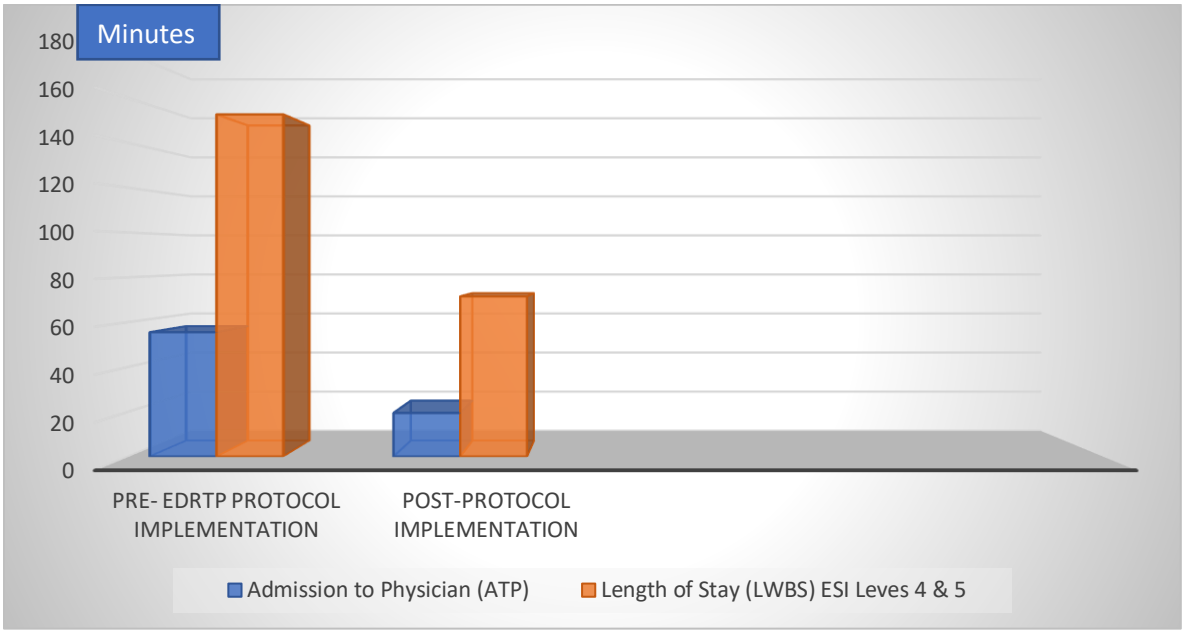


Figure 4 shows the significant decrease in the LWBS rate, from 4 patients to 1 patient in an 8-hr period.

Figure 4 LWBS Rates Pre- and Post-EDRTP Protocol Implementation

Project Success

Implementing the EDRTP and ESI training improved the triage process and positively impacted the project objectives. The data revealed increased knowledge and satisfaction among ED staff and decreases in ATP and ATD (ESI levels 4 & 5) times and LWBS rate. The improved ED staff knowledge and self-efficacy after the ESI training reflect a statistical significance between the pre-and post-training evaluation scores. Additionally, the chart review results revealed a significant change in ATP time (<20 min), ATD time for ESI levels 4 and 5 (<75 min), and LWBS rate (≤1%).

Process Results and Outcome

Project outcome. The DNP project outcomes produced up-to-date and evidence-based triage knowledge and skills. This project also resulted in a significant decrease in ATP time, ATD time for ESI levels 4 and 5, and LWBS rate. All DNP project objectives were met.

Suggestions for Project Improvement and Sustainability

The gap in nursing practice that this project addressed was the inconsistent triage of ED patients. Nurses face the challenge of limited time to assess and provide the appropriate level of care in triage. Although the results of this project show that ESI education had a meaningful effect on ED staff knowledge, the DNP leader identified opportunities for further learning and improvement. These suggestions for project improvement and sustainability are listed in Table 7.

Table 7. Suggestions for Project Improvement and Sustainability

#	Recommendations
1.	Dedicate a" "In Process" or" "In Progress" area for patients with ESI levels 4 and 5, such as a fast-track unit furnished with chairs only that is adjacent to the triage area. This strategy will expedite the care and discharge of patients without wait delays for bed assignments.
2.	Introduce triage self-assessment that requires ED staff to self-assess the triage acuity of 2–4 charts per month for project sustainability. This approach will create an opportunity to educate staff and ask super-users and managers questions.
3.	Assign a nurse call system, such as a walkie-talkie or Vocera, dedicated to the EDRTP team and charge nurse. This strategy will facilitate timely communication to expedite bed assignments from the charge nurse.
4.	Assess the environmental services process and staff assigned to the ED to decrease the time needed for cleaning beds.
5.	Plan for yearly ESI and EDRTP updates for project sustainability.
6.	Develop a strategic plan to address unexpected staff shortages for project sustainability.

Working in the ED requires performance competencies that provide rapid triage, assessment, decision-making, and diagnosis and treatment of patients with an extensive range of medical problems. According to Hitchcock et al. (2014), the triage process in the ED faces challenges in accuracy and other potential vulnerabilities. Triage continues to be under investigation regarding its accuracy and validity. Therefore, improving the skills of emergency nurses and physicians may improve their precision in accurately triaging patients (Rahmani et al., 2018).

Dissemination

The DNP project lead is grateful for the fantastic support from the project site leaders, CBU faculty, and hospital executives. The projects' success is mainly due to their openness to change and commitment to advancing quality outcomes while creating structures for future practice. Furthermore, the leaderships' support, flexibility, communication, availability, and commitment to improving patient care made this project successful. The success of this QI project has prompted the hospital leaders to make this triage process part of the standard hospital triage policy and share this best practice with several other hospitals within the company.

The DNP project lead plans to submit the results of this project to the *Journal of Emergency Nursing* or the *Emergency Medicine Journal* for publication. A copy of this project will be forwarded to the ED director, the quality assurance department, and the physician-in-chief. A permanent copy of this project dissertation will be submitted to the CBU Library. The final paper will be uploaded to ProQuest as a component of the theses and dissertations database.

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Appendix A (Page 1 of 2)

Emergency Department Rapid Triage Protocol (EDRTP)

Issuing Department: Emergency Department.

I. **Purpose:** Accurately and timely triage assessment of ED patients. Expedite arrival to physician times, decrease the number of patients LWBS and decrease patient arrival to discharge for patients with ESI levels 4 and 5.

II. **Scope:** Emergency department staff involved in providing care to ED patients.

III. **Objectives:**

1. Decrease patient ATP times to less than 30 minutes.
2. Decrease the number of patients who LWBS to less than 10%.
3. Decrease patient arrival to discharge for patients with ESI levels 4 and 5 to less than 2 ½ hours.
4. Implement an EDRTP at the project site in the timeframe of the DNP Project.
5. Organize an EDRTP multidisciplinary oversight committee at the project site in the timeframe of the DNP Project.
6. Provide multidisciplinary staff education and training for the EDRTP before the implementation of the DNP Project.

IV. **Indications:** Patients arriving at the ED triage front desk.

Appendix A (Page 2 of 2)

Emergency Department Rapid Triage Protocol (EDRTP)

V. Steps:

1. The front desk triage registered nurse will initiate EDRTP upon initial patient arrival to ED
2. The front desk triage registered nurse will quickly triage patients, arrive patients in EHR, document chief complaint, associated symptoms, and assign ESI levels in EHR.
3. The front desk triage registered nurse will call the secondary triage registered nurse via walkie-talkie to bring the patient to evaluation rooms 1, 2, or 3.
4. A secondary triage registered nurse will complete triage with EMT assistance or another triage registered nurse.
5. The secondary triage registered nurse will notify the ED Triage physician of the patient's triage completion and current status.
6. ED Triage physician will assess the patient and initiate ED physician orders.
7. The secondary triage registered nurse will call the charge nurse for the ED room assignment.
8. ED charge nurse will assign primary ED registered nurse and ED room assignment.
9. The secondary triage nurse will transfer the patient from triage to the ED back room and report to the primary ED registered nurse.

Appendix B

Chart Validation Tool

Date	Patient Arrival Time	ESI Level	Triage RN Initials	Charge Nurse Initials	Physician Assessment Time	Physician Initials	LWBS Yes/No	Inventory Value	Discharge Time	Protocol Followed Yes/No	Notes

Appendix C

Tools and Instrumentation

Tool/Instrument	Description
ED Dashboard	The ED dashboard was built by the Hospital Regional Information Technology Consultants and validated by Regional Executive Teams. The data is currently populated from the EHR (EPIC). In addition, the ED dashboard includes project metrics and others.
EDRTP protocol and EDRTP algorithm (Appendix A and E).	THE DNP LEAD CREATED the EDRTP protocol algorithm to map patient flow immediately after their arrival to triage and throughout ED. In addition, the protocol and algorithm will guide staff to sequential steps after the patient arrives at the ED. The protocol was presented to ED administrators, charge nurses, and physicians and approved by ED administrators, Hospital AMGA, ED Chief, and the employee union steward.
Chart validation tool (Appendix B)	The DNP lead developed the chart validation tool and validated/approved by ED administrators and the Quality Department Director. The DNP project leader conducted the chart reviews and data trending. ED Quality RN will enter the chart review findings on a hospital-approved quality template form.
PowerPoint Presentation (Appendix I)	The DNP lead created a PowerPoint EDRTP presentation to conduct ED staff and stakeholders training. The ED director and Medical chief approved the PowerPoint.
ESI Tool (Appendix C)	The Emergency Severity Index (ESI) is a five-level emergency department (ED) triage algorithm that provides clinically relevant stratification of patients into five groups from 1 (most urgent) to 5 (least urgent) based on acuity and resource needs.
Protocol algorithm handout (Appendix H).	A copy of the protocol in an algorithm format was given to all nurses attending the training. In addition, a copy of the protocol will be available at the nurse station in their huddle book. The charge nurse huddle binder is reviewed and shared during daily shift huddles by the charge nurse.
Protocol algorithm poster (Appendix GEDRTP).	A poster size of the EDRTP protocol algorithm was created and posted in the ED triage area, Fast track area, ED physician offices, and nurses' station.
Suggestion box	An EDRTP suggestion box was placed at the nurse station to collect ED staff feedback, concerns, suggestions, and recommendations regarding the EDRTP.

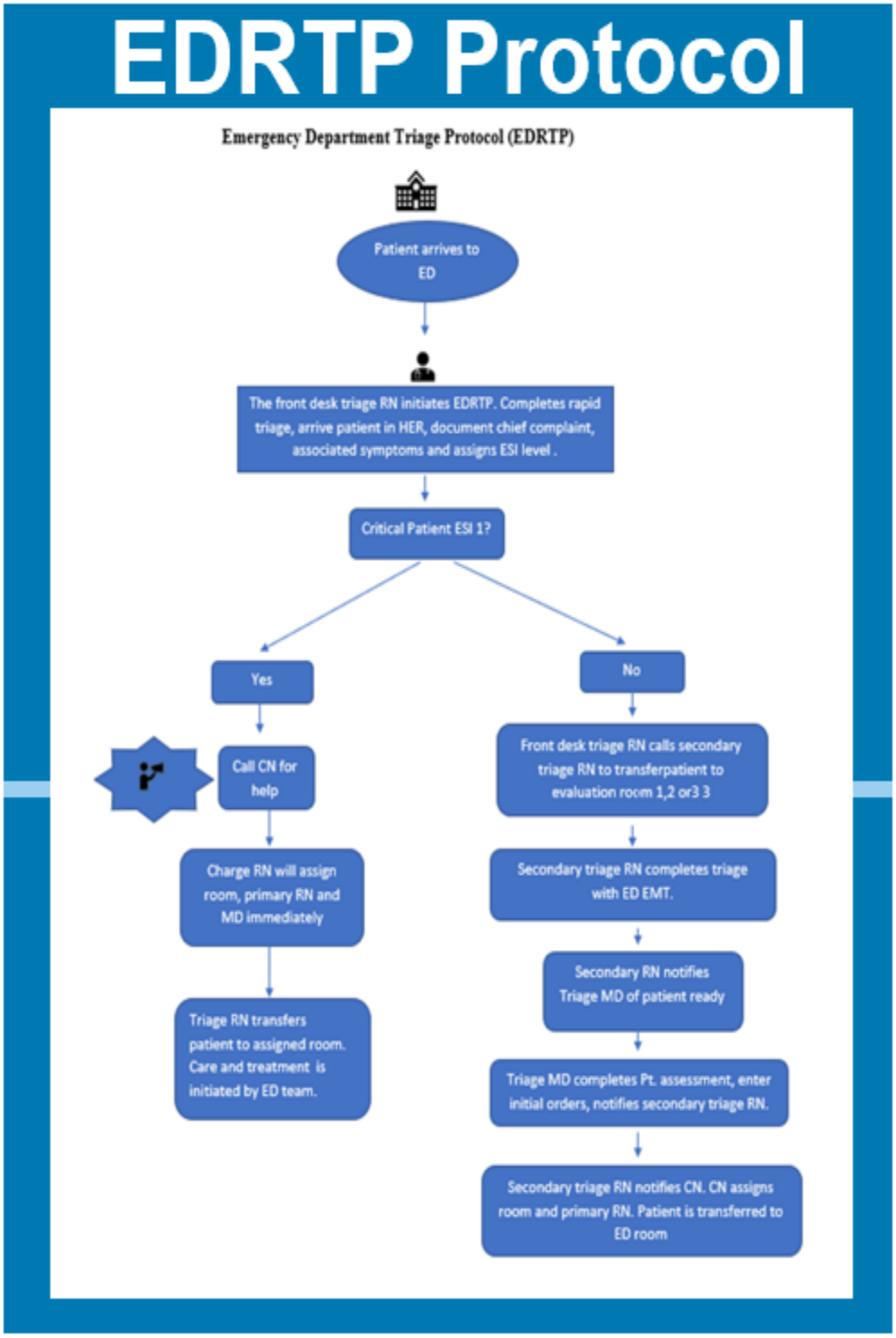
Appendix D

Kotter's Theory of Change Concepts

Dr. John Kotter's Theory of Change Steps	
Step 1	**Create a sense of urgency.** The key element in creating a sense of urgency is communicating to the team why it is vital to implement change decisively and urgently (Kotter, 2015). The team must perceive that the change is essential and demands urgent action. The path to creating a sense of urgency must include a message with clear consequences and specific tasks while recognizing employees who show a sense of urgency. A clear focus on the sense of urgency will help to trigger team motivation (Kotter, 2015).
Step 2	**Build a guiding team.** The goal of having the right key players involved is critical to the success of a system change. The right key players may include individuals with the right skills, leadership qualities, and credible performance. Influential leaders must include key stakeholders whose power comes from the job title, status, expertise, and political importance (Kotter, 2015).
Step 3	**Develop a change vision and strategy.** When developing change is vital to create a clear vision and strategy to guide the team towards understanding why the change is needed (Kotter, 2015). People need to have a clear picture of the goal for the instructions to make more sense. Subsequently, a clear vision and effective strategies are key to change
Step 4	**Create understanding and buy-in.** Once the vision is created, continuous communication throughout the organization is necessary for the teams to support the vision (Kotter, 2015). In addition, the leader must create an environment where the team motivates each other because they see a collective gain when achieving the goal (Webster & Webster, 2013).
Step 5	**Remove obstacles and empower others.** According to Kotter (2015), the alignment of an organization with the current process and structure is critical when removing obstacles and executing proactive actions. Proactive action includes taking control of the barriers and initiating strategies or actions while rewarding people for endorsing change (Kotter, 2015).
Step 6	**Generate short-term wins.** Short-term wins need to be celebrated to obtain results. The celebration will augment the influence of change and motivate employees to move the change program forward. The short-term wins will give the team a feeling of victory in the initial stages of change. The short wins approach will create multiple short-term targets instead of one long-term goal (Kotter, 2015).
Step 7	**Don't let up.** Once the momentum is lifted and short-term wins roll in, the change will have track and energy. The effective leader must remain relentless and build on this momentum while maintaining the vision and urgency of change.
Step 8	**Create a new culture.** The goal of making sure that change becomes a fundamental part of an organizational culture requires an alignment of shared values, beliefs, and attitudes (Kotter, 2015). The goal of driving and maintaining culture change requires continuous executive support, recognition, rewards, communication, and connecting culture and accountability (Kotter, 2015) to create and maintain the new culture.

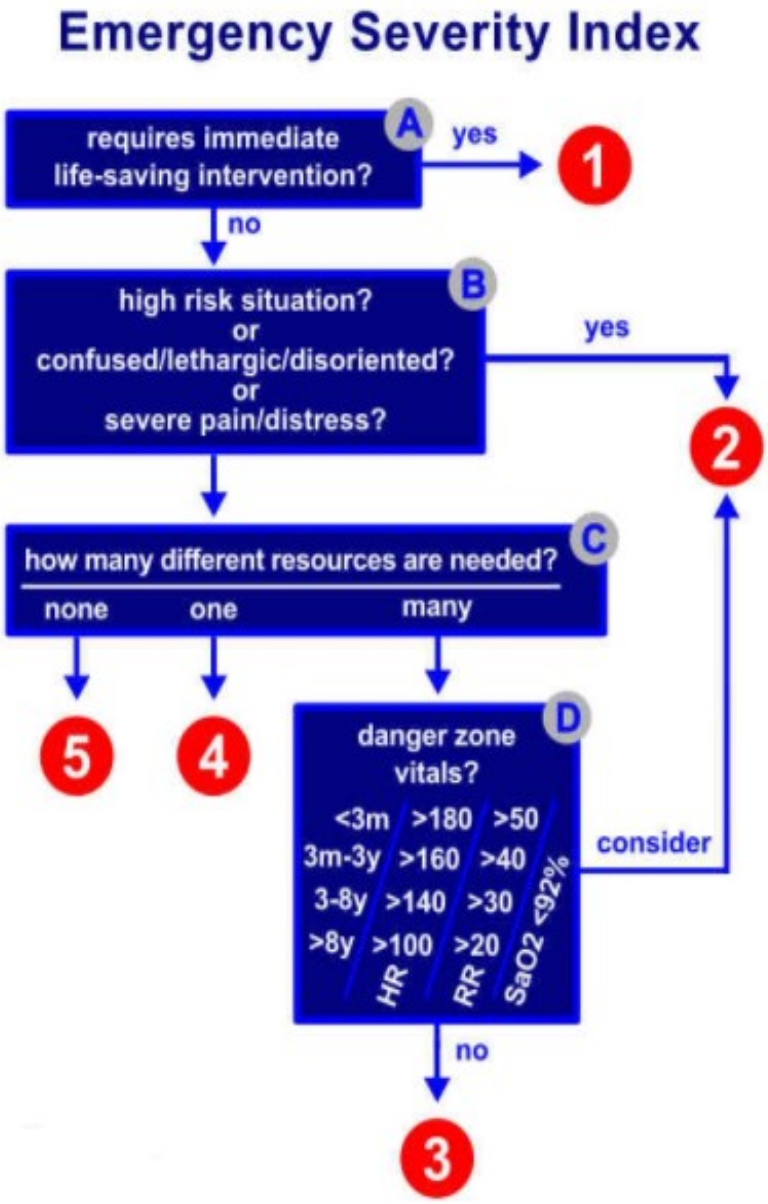
Appendix E

EDRTP Algorithm Protocol



Appendix F

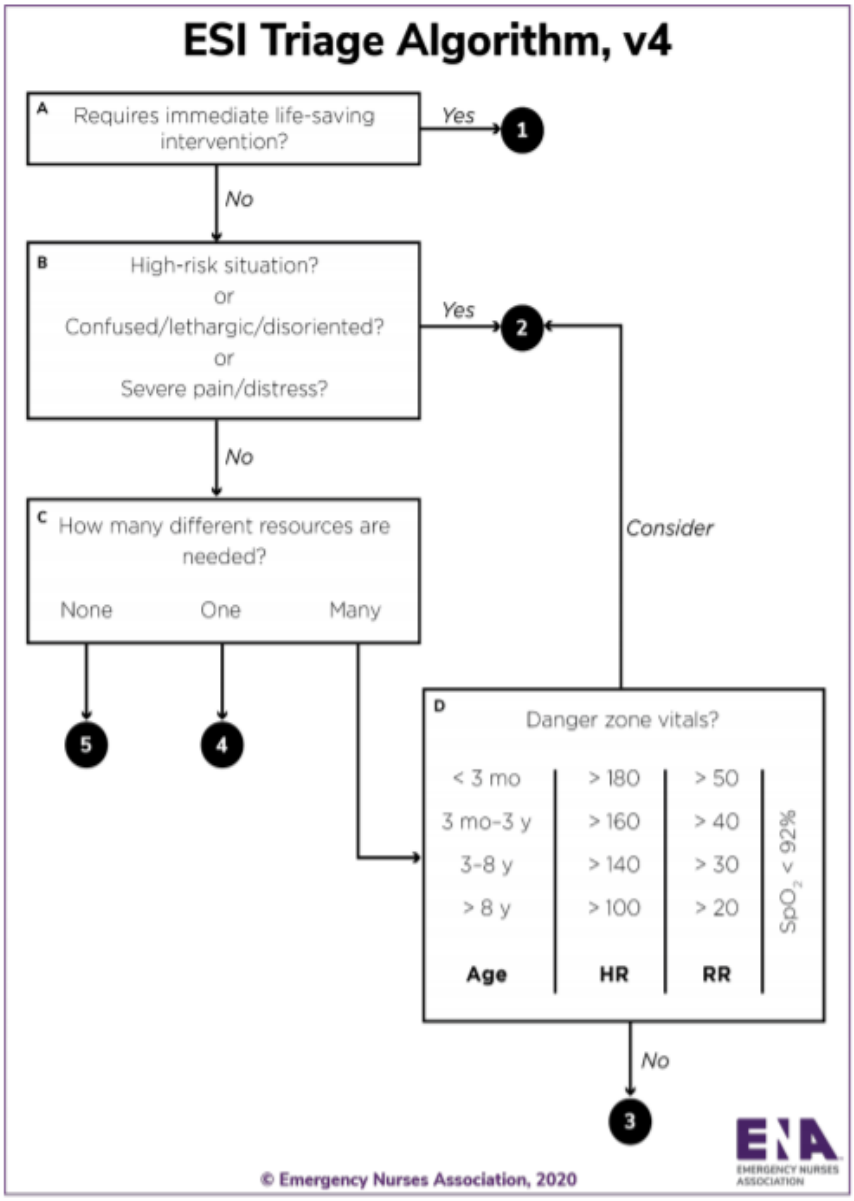
Staff Badge Buddy



Appendix G

ESI Algorithm

ESI Triage Algorithm, v4



Appendix H (Pg. 1 of 6)

ESI & EDRTP Presentation/Training

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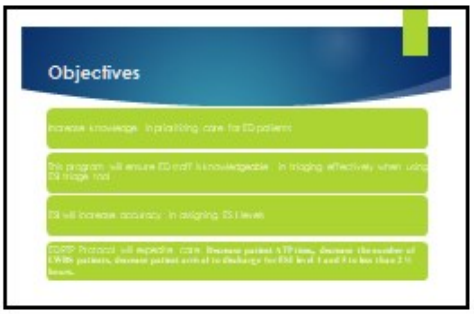

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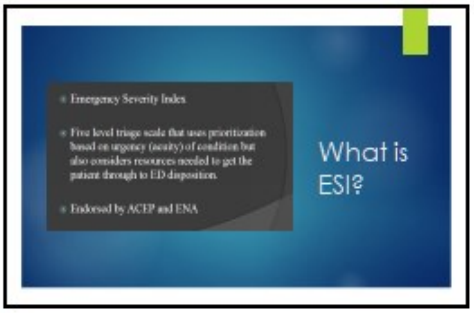

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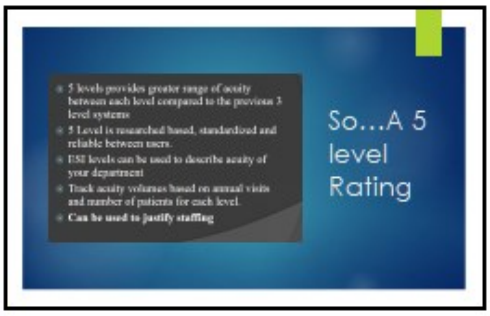
ESI & EDRTP Presentation/Training



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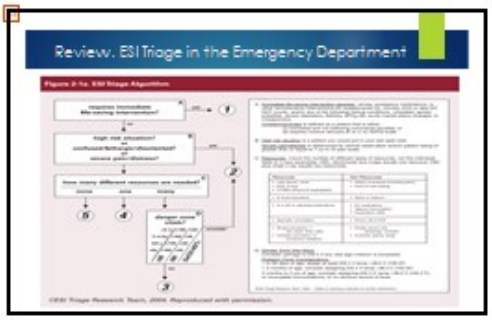

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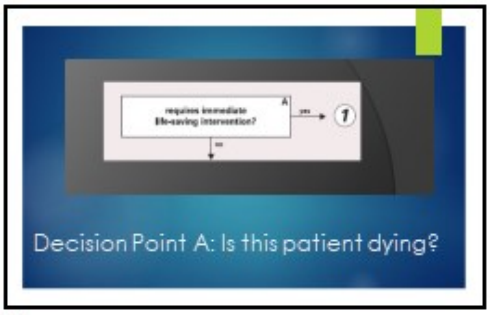

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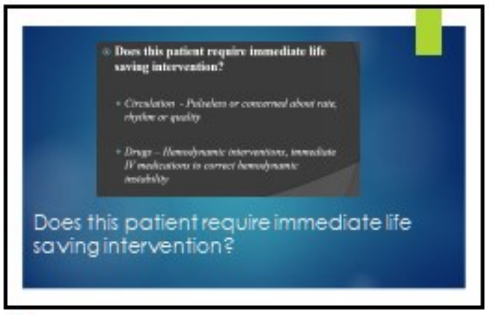

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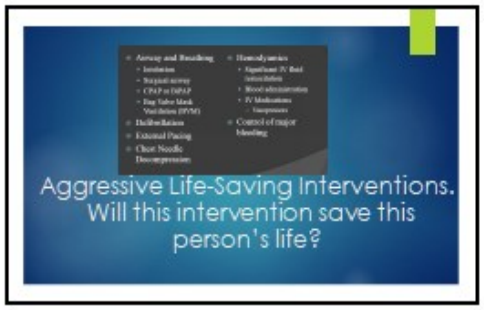
ESI & EDRTP Presentation/Training



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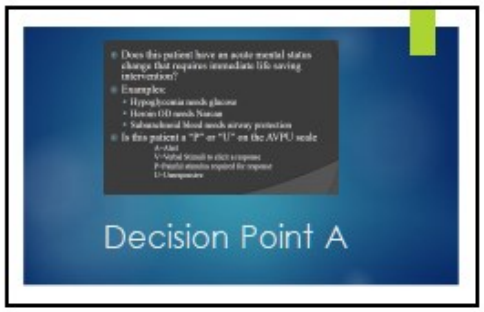

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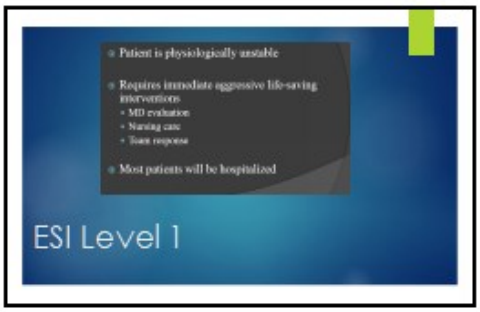

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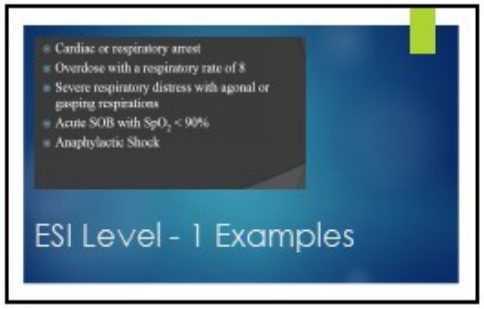

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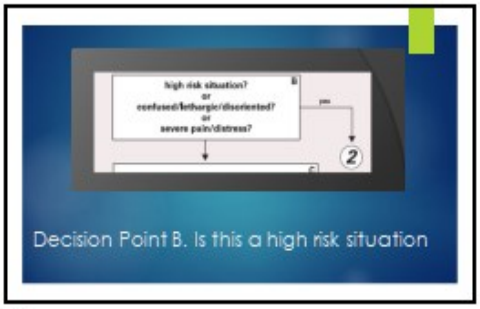

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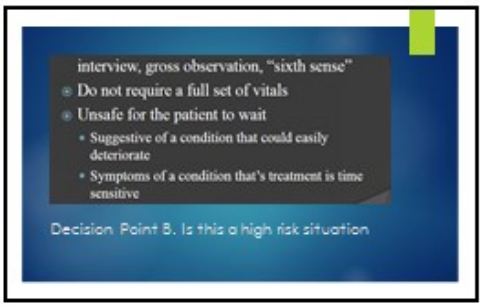
ESI & EDRTP Presentation/Training



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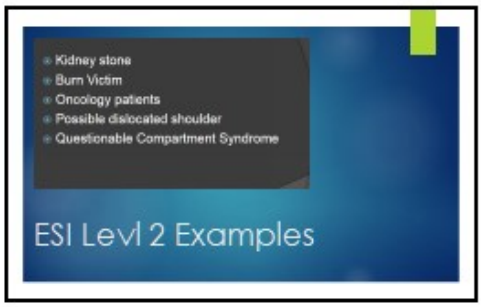

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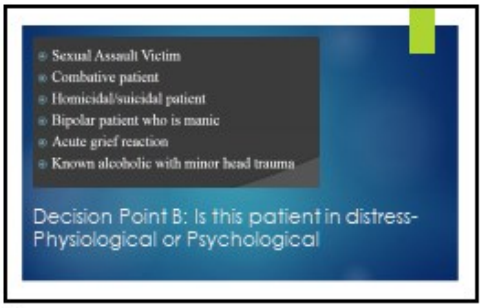

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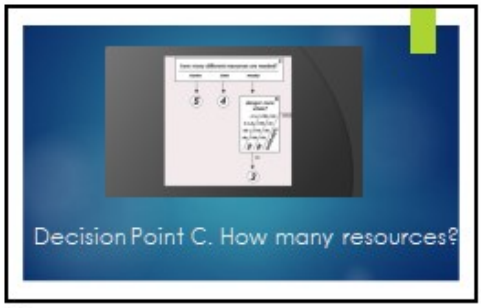

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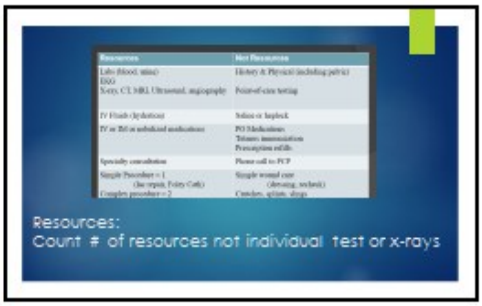

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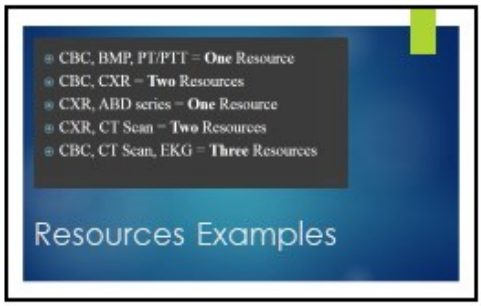

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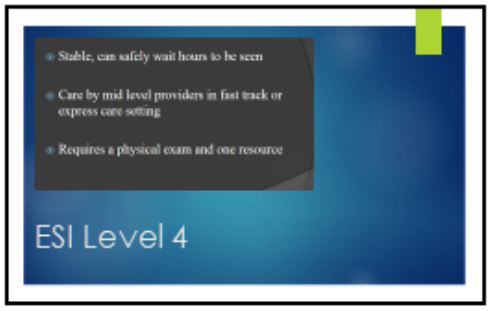
ESI & EDRTP Presentation/Training



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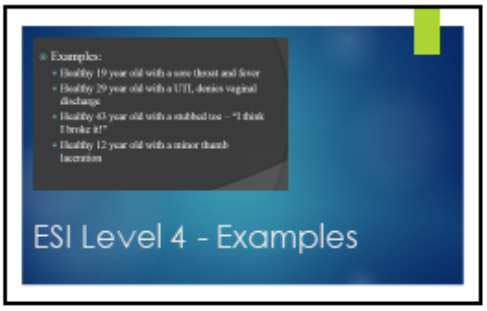

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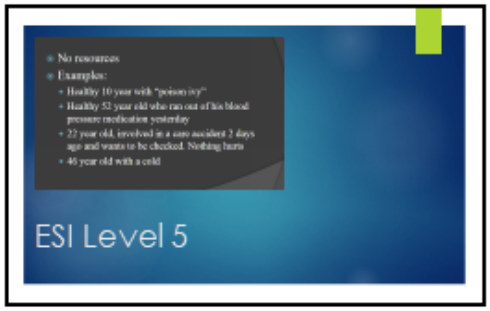

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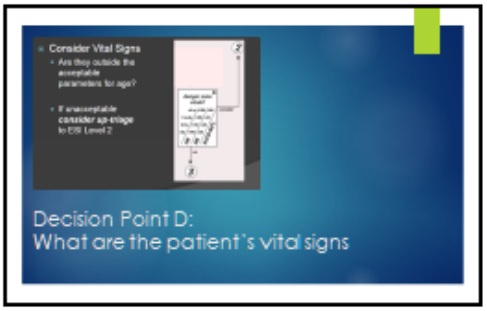

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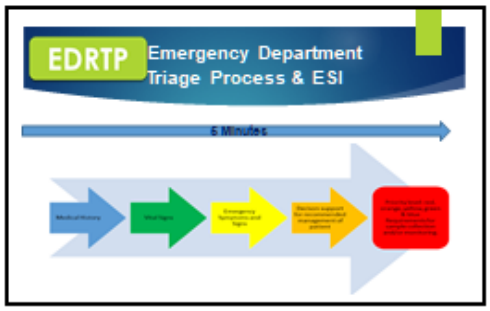

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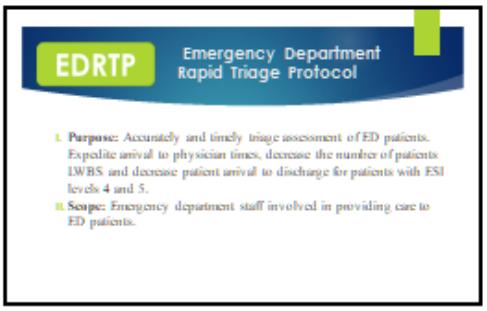

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ESI & EDRTP Presentation/Training

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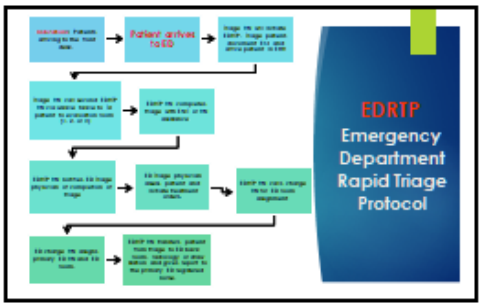

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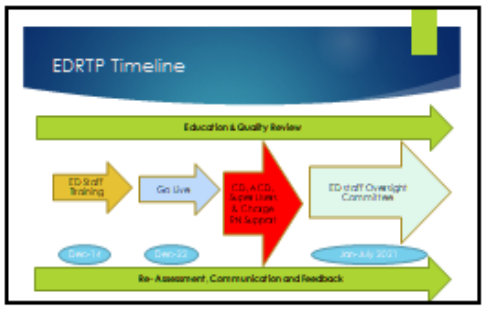

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Appendix I

Staff Survey- Pre/post ESI Education and Training

Purpose: Evaluation Tool to Assess ED Staff Knowledge, Confidence, and Beliefs about ESI Triage policy.

ESI Training					
Statement	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
	5	**4**	**3**	**2**	**1**
Beliefs					
I believe I have a working knowledge of ESI triage policy					
I believe a working knowledge of ESI policy can improve triage assessment					
I believe ESI triage policy improve the triage process by RN					
Knowledge					
I have an understanding of the ESI triage policy					
I have the working knowledge to assign ESI triage accurately					
I have an understanding of what constitutes an ESI level 5 triage					
Intentions/Confidence					
I have confidence in discussing ESI triage policy					
I feel well prepared in assigning ESI triage levels for all patients					
I have up-to-date skills to assign ESI triage level to all patients					

Appendix J

Staff Survey Pre and Post-EDRTP Education and Training

Purpose: Evaluation Tool to Assess ED Staff Knowledge, Confidence, and Beliefs about EDRTP.

EDRTP Training					
Statement	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
	5	**4**	**3**	**2**	**1**
Beliefs					
I believe I have all resources to expedite triage process					
I believe a working knowledge of EDRTP can improve triage assessment					
I believe a rapid triage can be achieved safely					
Knowledge					
I have an understanding of the role of ED physician in triage					
I have the working knowledge of what constitutes arrival to physician times					
I have an understanding of the consequences of overcrowding in ED					
Intentions/Confidence					
I have confidence in discussing ED metrics affecting patient care					
I feel well prepared with current ED triage process					
I know whom to contact for help if I need help in triage					

Appendix K (Page 1 of 4)

Project Timeline

Goal Date	Intervention	Approval Status	Participant Recruitment Responsible	Data Collection	Evaluation
Week 1 Two Educ. Days	Day 1-Training of 8 charge nurses and 25 RN super users Day 2- training for 40 ED staff.	All training dates approved by ED Clinical Director, Assistant Administrator of Medical group, and ED Medical Chief.	DNP Project leader, ED staff coordinator, and 2 Assistant Clinical Directors.	To be completed by DNP leader: *Collection of pre-implementation data. * Review 25 charts from 3-11 PM patient visits. *Collection and review of staff attendance log. *Pre-implementation data will be shared with ED Clinical Director for review.	Post-training review and debriefing of the first week of training to be completed by the DNP leader and two assistant clinical directors. Review findings will be shared with the ED Director.
Goal Date	**Intervention**	**Approval Status**	**Participant Recruitment Responsible**	**Data Collection**	**Evaluation**
Week 2 Two Educ. Days	Day 3- 40 employees attending training Day 4- 40 employees attending training. Day 5 (may be added as needed)	Training approved by ED Stakeholders as described above.	Project leader, ED staff coordinator, and 2 Assistant Clinical Directors.	To be completed by DNP leader: *Collection and review of staff attendance log.	DNP project lead will complete a Post-training review and debriefing. DNP leader will meet with ED administrators and EDRTP oversight committee.

Appendix K (Pg. 2 of 4)

Project Timeline

Goal Date	Intervention	Approval Status	Participant Recruitment Responsible	Data Collection	Evaluation
Week 3	EDRTP Project go-live 3-11 PM. DNP Project Lead on-site as a resource to ED staff (2 eight-hour days)	Project go-live approved by ED Clinical Director, Assistant Administrator of Medical group, and ED Medical Chief.	The DNP project leader, ED Clinical Director, ED Medical Chief, and Assistant Clinical Directors will be at the training site.	To be completed by the DNP project leader: *Retrieval of staff suggestions from "suggestion box".	Post-go-live debriefing to be completed by DNP project leader to identify challenges, sharing of staff suggestions, concerns, issues. ED administrators and the EDRTP committee oversight will be invited to the debriefing.
Week 4	2nd-week post EDRTP Implementation. DNP Project Lead on-site as a resource to ED staff (2 eight-hour days). Continuous assessment of project progress.	Continuous	Project leader, ED staff coordinator, and 2 Assist. Directors.	To be completed by the DNP project leader: *Retrieval of staff suggestions from "suggestion box"	DNP project leader to identify challenges, staff suggestions, concerns, and issues. In addition, the DNP leader will debrief ED administrators and EDRTP oversight committee.

Project Timeline

Goal Date	Intervention	Approval Status	Participant Recruitment Responsible	Data Collection	Evaluation
Week 5	3rd Week post EDRTP implementation continuous monitoring and assessment of project progress		Project leader, ED staff coordinator, and Assistant Clinical Directors.	DNP project leader will complete data collection and evaluation. DNP pad will retrieve staff suggestions from the "suggestion box."	DNP project leader to identify challenges, staff suggestions, concerns, and issues. In addition, the DNP leader will debrief ED administrators and EDRTP oversight committee.
Week 6 ▌	4th Week post EDRTP implementation. Continuous monitoring and assessment of project progress		Project leader, ED staff coordinator, and 2 Assistant Clinical Directors.	To be completed by the DNP project leader: *Retrieval of staff suggestions from "suggestion box."	

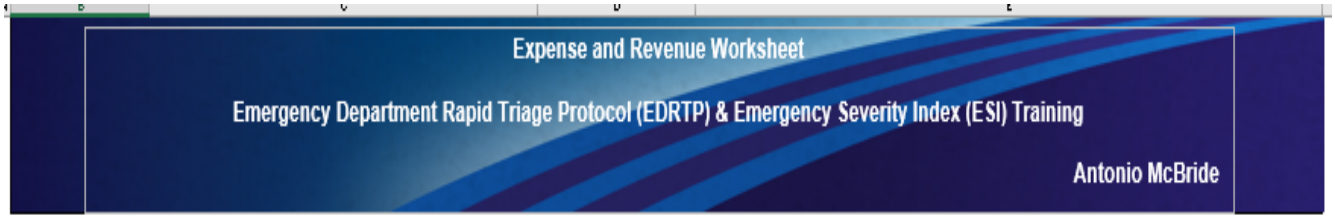
Appendix K (Pg. 4 of 4)

Project Timeline

Goal Date	Intervention	Approval Status	Participant Recruitment Responsible	Data Collection	Evaluation
Week 8	6th-week post EDRTP implementation. DNP Project Lead to present a pre and post-implementation data analysis.	Approved by: ED Clinical Director, Assistant Administrator of Medical group, and ED Medical Chief.	Project leader, ED staff coordinator, and 2 Assistant Clinical Directors.	* DNP project leader will present pre-and post-implementation data and analysis to the ED clinical director, Assistant Administrator for Medical Group, ED Medical Chief, Assistant Clinical Directors, Medical Director of Quality, and EDRTP oversight committee.	

Appendix L

Expense and Revenue Worksheet



Expenses

DESCRIPTION	COST BREAKDOWN	TOTAL COST	EXPLANATION
Labor	1 Assistant Clinical Director @ $65.00 x 8 hours + DNP Student @ $0.00 x 8 Hours	$520.00	ED staff training will take 2 RN Educators approximately 8 hours. Assistant Clinical Director presence will help & enhance training expectations.
Training	90 RNs @ $55.00/Hour X 8hrs.	$4,950.00	90 RNs are scheduled to attend training. ESI training = 4 Hrs. EDRTP training = 4 Hrs.
Training	No staff was added to cover the unit during training. Training options scheduled on 4 different day	$0.00	No staff was added to cover the unit during training.
Training	6 EMTs @ $25.00/Hour x 4 hrs	$150.00	6 EMTs scheduled to attend 4 hours EDRTP training.
Training	8 Receptionists @ $18.00/Hour X 4 hours	$144.00	8 ED Receptionists scheduled to attend 4 hours EDRTP training.

Revenue

DESCRIPTION	COST BREAKDOWN	TOTAL COST	EXPLANATION
Avoidance costs	24 hours triage RN reduction per day @ $55.00/ Hour = $1320.00	$48,1800.00 Reduction Per Year	The ED initially scheduled 3 triage RN's 24 hours a day. EDRTP project scheduled 1 RN at the ED front desk + 1 RN + 1 MD + 1 EMT in triage room. (EMT and MD were pulled from existing schedule matrix.) No new MD or EMT positions were added
Avoidance costs	**Reduction of RN and MD Overtime during high patient volume days from $5000.00 average per month to $1000.00 by:** *Decreasing patient Arrival to Physician (ATP) times to less than 30 minutes from the current average of 60-90 minutes for all ESI acuity levels.	$48,000.00 per year	Decreasing ATP times, LWBS rate, and ATD will most likely lead to improved throughput and -Decrease RN and MD over time due to high ED patient volume and slow throughput.
Avoidance costs	*Decreasing patient arrival to discharge (ATD) times for ESI levels 4 and 5 to less than 2 ½ hours.	$1277500.00 Per Year	The goal is to decrease ATD times for ESI 4&5 to less than 2 ½ hours. The current ATD for ESI 4&5 is 4-5 hours @ $55.00 RN time per patient. The EDRTP goal is 2 ½ hrs RN care @ $55.00. The current average volume of ESI 4 &5 = 25 patients per day.