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Factors Influencing the Experience of Assigning  
Acuity by Triage Nurses

by  
Casey Cole

A dissertation  
submitted in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy in the Department of Nursing  
Idaho State University  
Fall 2019

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To the Graduate Faculty:

The members of the committee appointed to examine the dissertation of CASEY C. COLE find it satisfactory and recommend that it be accepted.

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Sincerely,

Ralph Baergen,  
PhD, MPH, GIP  
Human Subjects  
Chair

## Dedication

To my family: I love you.

## Acknowledgements

Undertaking this PhD has been a truly life-changing experience for me and it would not have been possible to do without the support and guidance that I received from many people.

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## Factors Influencing the Experience of Assigning Acuity by Triage Nurses

Dissertation Abstract—Idaho State University (2019)

The objective of this qualitative, phenomenological study was to reveal the nature of the triage nurses' experience and the factors associated with assigning acuity levels. Triage is used in almost every hospital-based Emergency Department (ED) in the United States, and most hospitals use the Emergency Severity Index (ESI), a five-tiered algorithm that provides clinically relevant stratification of patients into groups based on resources needed. Inaccurate ESI assessments and long wait times in EDs can lead to triage-related complications that can affect patient morbidity and mortality. This was a qualitative study using semi-structured interviews with triage nurses. Nine triage nurses from different regions across the United States were interviewed about their experiences in triage. Interviews were transcribed verbatim and two reviewers analyzed transcripts following phenomenological principles using Dedoose®. Researchers used a thematic process over several meetings to produce the final set of codes and identify themes. Respondent experiences of triage were described by three themes; the paradoxical process of triage, decision making within chaos and two sides of the labeling coin. The triage process is complex, dynamic, and highly subjective. Nurses triage patients using traditional assessment methods but use additional approaches to deal with the complex, stressful and rapid ED environment. It is important that ED nurses are aware of the factors which influence their clinical decisions when they are assigning triage levels in the ED to avoid errors during the triage process based on these influences.

Keywords: *Triage, Decision-making, Nurses, Emergency Department*

## **Chapter I: Introduction**

Each year, approximately 141.4 million patients visit Emergency Departments (ED) in the United States (National Hospital Ambulatory Medical Care Survey, 2014). In EDs, a process known as triage is used to prioritize the patients by the urgency of their medical conditions. The triage process, which is performed by trained Registered Nurses (RNs) using objective and subjective measures, has been identified in relevant literature as a process in which errors can occur (Gerdtz & Bucknall, 1999). However, the incidence and severity of triage errors in EDs are not accurately known (Stang, Wingert, Hartling, & Plint, 2013). Studies suggest that the number of early deaths related to ED care ranges from 5 to 30 per 100,000 visits (Goulet, et al., 2015).

For triage nurses to make accurate clinical decisions, they must correctly assess patient signs and symptoms to assign an accurate triage level to the patient (Sanders & Minick, 2014). Research has shown that triage accuracy rates are low and that the delays in patients who need emergent care are high (Sanders & Minick, 2014). Inaccurately assigned triage levels can result in unsafe or needless delays for patients, and accurate triage decisions can reduce mortality and morbidity rates (Sanders & Minick, 2014). Certain factors are known to affect the subjectivity of triage decision-making—such as experience, education, intuition, and environment (Garbez, Carrieri-Kohlman, Stotts, Chan, & Neighbor, 2011; Andersson, Omberg, & Svendlund, 2006; Wolf, 2010). Subjectivity in clinical decision-making in the triage process can be targeted for interventions to improve the accuracy of the triage process (Mistry, et al., 2017). Though patient-centered studies in non-ED areas found a relationship between the patients' sociodemographic factors and the nurses' clinical decision-making (Sanders & Minick,

2014), no studies have explored the effects of patients' sociodemographic factors on clinical decision-making in the ED triage process. The objective of this study is to investigate the nature of the triage nurses' experience and the factors associated with assigning acuity levels.

### **Clinical Decision-Making**

The concept of *clinical decision-making* is defined as the making of important clinical judgments in conditions of uncertainty, especially where time and relevant data about a patient's condition may be limited or ambiguous, involving choosing one course of action over other options (Gerdtz & Bucknall, 1999). Cioffi (1998) describes decision-making as judicial thinking that is used to choose a course of action. According to Hammond (1966), clinical decision-making is a complex process because of the multiplicity of cue states, the considerable amount of information, and the possibility of unknown probabilities of outcomes.

### **Decision-Making in Nursing**

Clark (1996) defines clinical decision-making in nursing as a process that nurses use to gather information about their patients, to evaluate that information, and to make judgements that result in the provision of nursing care. Clinical decision-making has been identified as one of the most critical skills for nurses (Jenkins, 1985), but it is extremely difficult to measure. Efforts to evaluate clinical decision-making include simulation (Cioffi, 1999) and real work situations (Jenkins, 1985). In the clinical setting, nurses are persistently faced with demands to make decisions regarding care. The process of coming to a choice is the essence of decision-making (Björk & Hamilton, 2011). In general, nurses must manage a range of information from multiple sources to make informed

clinical decisions (Bakalis & Watson, 2005). Many researchers have emphasized that clinical decision-making is the most integral component in nursing (Bakalis, 2006; Bakalis & Watson, 2005; Thompson, C., Aitken, L., Doran, D., & Dowding, D. 2013). According to Bakalis and Watson (2005), nurses are generally the first health care professionals to observe rapid changes in patients' physical states, and they are compelled to quickly employ clinical decision-making to address these changes. Furthermore, clinical decision-making may be related to education and clinical experience (Bakalis & Watson, 2005), as well as a wider range of cues the nurses may discover and use during the deliberation phase of the decision-making process. However, the exact process of decision-making remains unknown. Researchers do know that decision-making is an essential component of the nursing role (Caputo & Mior, 1998). In addition, the increasing complexity of clinical nursing demands that more informed decisions be utilized to ensure effective and safe care of patients (Parsonage, 2010). The role of nursing is multidimensional, and this quality has a profound effect on clinical decision-making (Bucknall & Thomas, 1995). This influence is explained in detail in Chapter 2.

### **How Clinical Decision-Making is Used in the Triage Process**

Clinical decision-making is the crux of the role a RN plays in the triage process (Ebrahimi et al., 2016). A triage nurse must decide, in only a few minutes, how critical a patient's condition is and assign a score that determines how quickly he or she is treated. This decision hinges on the triage nurse's competence in clinical assessment and decision-making. In a triage setting, nurses must make challenging decisions, which

include patient safety and priority of resource delivery, so the nurses must have astute assessment skills to categorize patients and to prioritize their care (Mezza, 1992).

### **Triage**

Triage is the accepted standard for patient assessment used in most hospital-based ED in the United States (AHRQ, 2012) and most hospitals use the Emergency Severity Index (ESI), a five-tiered algorithm that provides clinically relevant stratification of patients into groups (Gilboy, Tanabe, Travers, & Rosenau, 2012). The ESI is used to predict the outcomes and to evaluate the quantity of medical care needed (Champion et al., 1980). Support for ESI reliability and validity is reported via kappa statistics to measure inter-rater reliability (Gilboy et al., 2012). The essence of the triage process involves the sorting of patients on the basis of their needs for immediate medical treatment (Moskop & Iserson, 2006). The system used for triage is a standardized scale; however, RNs practice clinical decision-making when assigning the scores. In particular, the triage process is a filtering system performed by triage nurses, who must consider each patient's characteristics and then compare these qualities with previously triaged patients and the systematic triaging rules of the ESI algorithm to assign an acuity level (Chonde, Ashour, Nembhard, & Kremer, 2013). These nurses' roles require that they make decisions as independent practitioners. This level of decision-making requires competence in discerning what is relevant to making qualified, accurate decisions. In essence, triage is meant to be quick and to the point, and it should focus on each patient's primary need to ensure prompt and effective treatment (Sanders & Minick, 2014). No consensus has been established for an appropriate time limit for the triage process;

however, in general, it takes between two and five minutes (Gilboy, Travers, & Wuerz, 1999).

Triage is the point at which emergency care begins within EDs. In general, triage occurs at the front of EDs and is the initial access point for patients to the EDs. The triage nurse is usually the first person a patient sees, and the sickest patients are given medical care first. An exception to this is individuals brought in by ambulance, who generally bypass the triage process because the presented conditions are more severe. The assumption is that patients brought by ambulances require more resources than patients who have already been triaged in the waiting rooms of EDs.

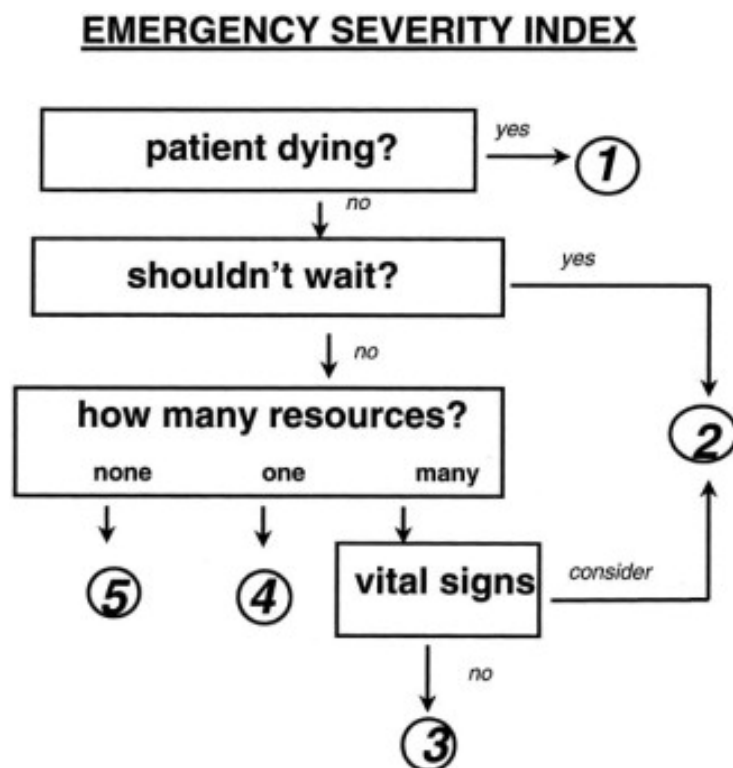
### **Triage Assignment**

In general, the nurses assign the patients to one of five levels (Champion, et al., 1980), ranging from Level 1 (*most critical*) to Level 5 (*least critical*). According to Mistry et al. (2017), the ESI facilitates rapid decision-making via three primary questions (see Figure 1): (1) Does this patient require an immediate lifesaving intervention? (2) Is this a high-risk situation? (3) How many resources are required to care for this patient?

### **History of ESI**

In 1995, David Eitel and Richard Wuerz developed the three-level ESI, a triage algorithm with three decision points that triage nurses use to assign the patients to one of the three ESI levels, and this decision is based first on acuity and then on the anticipated resource usage (Gilboy et al., 2012). In 2003, the ESI was updated to a five-tier algorithm. The American College of Emergency Physicians (ACEP) and Emergency Nurse Association (ENA) recommended the adoption of a five-tier triage scale. In 2003, to facilitate the adoption of the ESI in EDs, the Agency for Healthcare Research and

Quality (AHRQ) at the U.S. Department of Health and Human Services provided funding for the development of ESI training materials, including the current ESI implementation handbook, *Emergency Severity Index, Version 4: Implementation Handbook* (Gilboy et al., 2012). The ESI triage levels are outlined in Figure 1. In summary, acuity judgments are addressed first, based on the stability of the patient's vital signs, the potential threats to the patient's organs or life, and high-risk presentations (i.e., cardiac or respiratory arrest) (Gilboy et al., 2012). For patients determined not to be at risk of high acuity and deemed stable, the expected resource needs are addressed on the basis of the triage nurse's prediction of the resources needed to move the patient to the appropriate location from the ED (Gilboy et al., 2012). Since 2003, the ESI algorithm has not been updated or received any substantial changes.



**Figure 1. ESI Algorithm**

Agency for Healthcare Research and Quality's Emergency Severity Index (ESI): Version 4.

As outlined in Figure 1, patients dying are categorized as Level 1 - these patients need resuscitation or other immediate treatment, such as cardiac arrest or severe and unstable trauma patients. Patients who should not wait are categorized as Level 2 - these patients are at a high risk of decompensation and need emergency treatment, such as chest pain or psychiatric patients. Patients deemed safe are categorized as Level 3 - these patients are stable enough to wait but need urgent treatment, generally abdominal pain and fractures. Level 4 patients do not require urgent care, such as urinary tract infections, headaches or simple lacerations. Level 5 patients can be treated in a clinic, with non-urgent treatment, based on anticipated resource utilization, such as medication refills, cold symptoms and follow ups (Sanders & Minick, 2014; Dugas et al., 2016). Level 3

patients are expected to require the most resources (more than two). Level 4 patients normally need only one resource, and Level 5 patients normally do not require any resources. The triage provider can re-categorize a patient to any level at any time if there are changes in the patient's subjective or objective symptoms (Dugas et al., 2016).

### **Why an Accurate ESI is Important**

EDs have been identified as a site where preventable errors occur (Hitchcock, Gillespie, Crilly, & Chaboyer, 2014). EDs are the frontline for patients arriving at hospitals, and they are often chaotic because of the urgency needed to provide lifesaving care (Hitchcock et. al, 2014). Triage is the first step of a patient's journey in an ED; therefore, triage is the first logical step to consider patient safety and the potential for errors and mistakes. Triage is a complex and necessary process that is integral to the safety and effectiveness of serving communities with emergency care (Hitchcock et al., 2014). Inaccurate triage conclusions may leave severely sick patients at risk for deterioration while they wait (McHugh et al., 2012). Hitchcock et al. (2014) found that extended times to assessment and treatment occur frequently and may delay patients' care and thus potentially put their safety at risk.

### **Significance of ESI Inaccuracy**

In the United States, the Institute of Medicine committee characterized ED overcrowding as a national crisis (IOM, 2006). Current evidence indicates that nurses' clinical decisions and judgments need further development; about half of all adverse events stem from errors (Thompson, Aitken, Doran, & Dowding, 2013). Moreover, studies show inconsistencies and unpredictability in EIS assignment resulting in over- and under-triage. Under-triaging is giving a lower score than the ESI algorithm advises,

contributing to delays in time-sensitive interventions and potentially avoidable clinical deterioration, morbidity, and mortality (Hitchcock et al., 2014). Over-triage is defined as giving a higher acuity designation than the ESI algorithm advises can have indirect but equally harmful outcomes (Dugas, et al., 2016).

Thompson et al. (2013) state that nursing can contribute to raising health quality through improved judgements and decisions within health systems. According to Sun et al. (2013), patients admitted to hospitals from the EDs during periods of high crowding die more often than similar patients admitted to the same hospitals when their EDs are less crowded. In addition, long wait times in EDs can lead to triage-related complications that can affect patient morbidity and mortality (Sun et al., 2013). In a retrospective study by Goulet et al., (2015) the authors that found half of all unexpected deaths in the ED were related to a medical error that could have been avoided, out of this half, 45% were found to have an incorrect triage. Of these, under-triage—or the under recognition of acutely ill patients who required close monitoring—was found to be the main error that contributed to the death of 16% of the triaged patients in their study. No exact data has been provided on the national mortality and morbidity rates of inaccurate triage assessments, most likely because of the substantial inconsistencies in cause-of-death reporting (Centers for Disease Control [CDC], 2017).

## **Errors**

The ACEP reported that more than 1,000 EDs (11%) in the United States closed during 1993–2013 (American College of Emergency Physician [ACEP], 2015), despite a steady increase in patient volume, from 119.2 million visits in 2006 to 141.1 million in 2014 (CDC, 2017). ACEP projected the number of ER visits would exceed 150 million

for 2016. Thus, triage RNs are responsible for making appropriate and accurate clinical decisions in a setting that involves overcrowding, life-threatening conditions, and inadequate staffing (ACEP, 2015).

Research on patient safety in EDs has historically centered on areas such as medication errors, medical and diagnostic errors, and clinical handovers (Hitchcock et al., 2014). However, research has not concentrated on the problems and potential vulnerabilities in the triage process (Hitchcock et al., 2014). The limited research on errors in the triage process has focused on the ESI levels, and the relevant research is outlined in Chapter 2. Researchers have found that approximately 65% of patients are lumped into the medium category in the ESI (Level 3), even though there can be wide variance in the severity of their symptoms and ultimate diagnoses (Mistry et al., 2017). Out of the 65%, approximately 10% were under-triaged (Levin, 2017). This is crucial because ESI Level 3 patients might have benefited from being up-triaged to a more critical priority level, such as Level 1 or 2. These patients were at least five times more likely to experience a critical outcome—such as death and admission to the ICU or emergency surgery—and two times more likely to be admitted to the hospital than those triaged in the Level 3 category (Levin, 2017).

Several lines of evidence—including a variability of inter-rater reliability, a lack of discrimination, the fact that half of patients nationwide are triaged to ESI Level 3, and the reports of suboptimal performance with low accuracy and high variability—suggest that the ESI is less accurate in a true clinical context than expected (Mistry, et al., 2017).

Failure to triage patients appropriately can put severely sick patients at risk for deterioration while they wait. Despite the ESI's widespread implementation, it relies

heavily on the provider judgments and is subject to high variations. The inability to differentiate poses safety risks to patients who are critically ill and under-triaged and can influence the precision and efficiency of ED resource allocation because low-acuity patients are over-triaged. Four errors contribute to vulnerabilities in the ESI process: (1) over-triage, (2) under-triage, (3) overcrowding, and (4) long wait times.

### **Over-Triage, Under-Triage, Overcrowding, and Long Wait Times**

Designating triage levels is often associated with the tracking of patients to specific ED care locations on the basis of the anticipated resource needs, and the designated triage levels have been shown to influence decisions related to utilizing physicians, including hospital admissions. Thus, over-triaging results in inappropriately diverting limited time and scarce resources from the patients most in need to those with less-severe conditions (Hitchcock et al., 2014).

Another issue that affects the triage status of patients is overcrowding. Substantial information has been published on the complications that arise from overcrowded EDs. According to the most recent report from the American Hospital Association, 38% of hospital EDs are operating at levels considered to be “at or over capacity” in the United States (American Hospital Association, 2011). Delays to thrombolytic therapy, percutaneous coronary intervention, antibiotic administration, asthma treatment, and analgesic administration have been associated with ED crowding, thereby placing under-triaged patients at unnecessary risks of further complications (Hitchcock et al., 2014).

Long wait times due to overcrowding or under-triaging can affect patient outcomes in other dangerous ways. Patients may become impatient and leave without receiving medical treatment, and these patients are referred to as “left without being

seen” (Pielsticker, Whelan, Arthur, & Thomas, 2015). In addition, patients who leave prematurely often seek care from other sources, and their doing so may further diminish healthcare resources (Pielsticker, et al., 2015). In a study by Goulet et al. (2015), the most common cause of medical errors in the relevant ED was a severe delay in the triage assessments. In EDs, the chief aims are to treat the sickest patients first and to treat all patients in a timely manner; however, when the resources of an ED are overwhelmed, patients may wait dangerously long times to receive care (Levin, 2017). In addition, overcrowding may result in patients with higher ESI scores deteriorating while awaiting care. Moreover, such deterioration may go unassessed, leading to less-sick patients being seen while the sicker patients wait in the lobby (Levin, 2017).

### **Perceptions**

Perception involves the way one sees the world (McDonald, 2012). Perceptions often come to light when individuals encounter ethnically diverse patients in their practices (McDonald, 2012). Individual attributes may include personality traits, behavioral dispositions, and physical characteristics (Encyclopedia of Sociology, 2001). There is no question that perceptions in healthcare exist; differences based on race or ethnicity have been documented across many issues—such as diagnostic and therapeutic procedures, the intensity of medical care received, pain control, access to transplants, and access to preventive services (Cohen, 2004). Conflict between nurses’ and patients’ perceptions can lead to miscommunication and suboptimal outcomes (McDonald, 2012). McDonald (2012) suggests the notion of perception is a driver of health actions and is of particular importance to nurses as they attempt to manage health outcomes.

Given that perception is a uniquely subjective experience, an individual can only draw from what is known. Walker and Avant (2011) have recommended using a thesaurus and available literature to identify potential uses of the word *perception*. In literature, the term *stereotyping* is frequently used in relation to perception.

Stereotyping is the process by which people use the social categories of race and gender, as well as other social categories for acquiring, processing, and recalling information about other people (Smedley, Stith, & Nelson, 2003). According to cognitive psychologists, stereotyping is deeply embedded in human cognition and functions unconsciously to help people organize and simplify complex situations, thereby providing them greater confidence in their ability to understand, predict, and potentially control situations and other people (Smedley et al., 2003). The foundation of the concept is that if people had to think consciously and classify everyone else they came across, whatever their social, racial, or gender classifications, people would presumably be paralyzed by cognitive overload. Stereotyping is built into people's nervous systems and conditioning to help them not only deal with these differences in their everyday lives but also work through complex situations (Smedley et al., 2003).

### **Assumptions**

The following assumptions based on Merleau-Ponty's (2000) *Phenomenology of Perception* were drawn for purposes of this study:

1. Triage nurses can best relate their lived experiences of triaging individuals in the ED.
2. All respondents are honest in their answers.
3. Respondents answer questions based on their perceptions of their lived

experience.

4. Perception becomes an interpretation of the signs that one's senses provide in accordance with bodily stimuli.

### **Limitations**

This study utilized purposive sampling. Because purposive sampling was used, there is concern for researcher bias and the potential for selection bias (Patton, 2002). Because interviews were used as the method to collect data, there are risks for response bias and socially desirable responses (Maxwell, 2013). It is important to recognize that an interviewer can influence respondents' responses because they also have biases or perceptions (Creswell, 2014).

Another concern was accrual to the study due to social desirability concerns with self-reporting negative information (Althubaiti, 2016). Cultural differences can influence how the respondents answer the interview questions and thus should be a consideration. In addition, achieving an adequate saturation is a concern, as well as the fact that data gathering can require a substantial amount of time and resources and that controlling the pace and progress and end points may be difficult (Patton, 2002). Because phenomenological methodology was utilized in this study, limitations may arise because the process can be time consuming and labor intensive (Maxwell, 2013). The amount of analysis that needs to occur to render results is extensive. Furthermore, because this study used a qualitative design, the individual circumstances from which the data was collected cannot be generalized (Creswell, 2014). In addition, there may be limitations linked to credibility and reliability.

## Delimitations

The known limitations and assumptions can be addressed through the qualitative research guidelines set forth by Lincoln and Guba (1985), who have outlined four criteria to strengthen the study findings: credibility, transferability, dependability, and confirmability. In addition, authenticity is discussed as a new addition to addressing trustworthiness, as outlined by Patton (2002).

The issue of trustworthiness arises in qualitative research; to address this, I continually assess the credibility of the study. Lincoln and Guba (1985) define *credibility* as the “holistic representation of the phenomena under exploration” (p. 302). This was obtained through prolonged engagement not only in the interviews but also in the process of triage. I spent significant time in the phenomena, and continually observing and understanding the respondents’ perspectives are key. As Lincoln and Guba (1985) have noted, “if prolonged engagement provides scope, persistent observation provides depth” (p. 304). When conducting the study, I engaged in brainstorming sessions with my dissertation committee chair as well as triage nurses not included in the study to better understand behaviors and perspectives. I have the unique opportunity to engage in these conversations given access to triage nurses in a work setting. Another aspect of credibility is to secure feedback from faculty who can question bias, errors of facts, interpretations, and convergences between data and phenomena (Lincoln & Guba, 1985). I partnered with faculty to review the findings of data, coding, and themes. Member checking was utilized at the end of each interview; that is, key points of each interview were summarized, and the respondents were asked to confirm or clarify the findings presented. Lincoln and Guba (1985) recommend sharing only portions of the interview

that can be easily digested by the respondents and asking for confirmation and honest feedback. An additional step to ensuring credibility is triangulation. Carter, Bryant-Lukosius, DiCenso, Blythe, and Neville (2014) define three types of *triangulation*: *Method, Investigator and Data source triangulation*. This study utilized investigator triangulation, where two or more researchers in the same study provided observations and conclusions (Carter, et al., 2014). The two researchers involved in triangulation were the chair of the dissertation committee and the researcher. According to Carter, et al (2014) this type of triangulation can bring both confirmation of findings and different perspectives.

*Dependability* involves the presence of stability if findings are consistent over time and across conditions (Lincoln & Guba, 1985). To ensure the same research process and data generate the same general findings depends on external audits, which are an important strategy to improving dependability and assessing the truthfulness of studies (Lincoln & Guba, 1985). External audits of this study's procedures and data analyses occurred through collaboration with faculty to review the research procedures and findings (Lincoln & Guba, 1985).

*Transferability* determines what the findings are comparable (Lincoln & Guba, 1985). This was achieved through a thick description of how the interviews were conducted, where they are conducted and detailed aspects and experiences of the data collection process.

The next step described by Lincoln and Guba (1985) is *confirmability*, which is to assess whether the findings of a study are accurate. Establishing confirmability is done in phenomenology via an audit trail and reflexivity. The audit trail is outlined in the

Procedures section of study methodology. *Reflexivity* refers to incorporating a researcher's background, knowledge, bias, methodology, and perspective into a study. Reflexivity represents what a researcher knows about himself and the respondents, and that knowledge is continuously recorded to offset preconceived notions about the research, which might interfere with data analyses and interpretations (Malterud, 2001). In the present study, reflexivity was conducted via bracketing identifying any areas of potential biases that can influence the interviews. This was done through an exercise with the Dissertation Chairperson, further described in Methods chapter 3.

The final element is *authenticity*, Patton (2002) claims that the concept represents the purpose of such research and identifies the intended value of such research. The intended value of a study, along with the benefits to the stakeholders, should be considered (Patton, 2002). This includes obtaining saturation and considering as many voices as possible, as this increases authenticity and applicability of the results. For this study, the interviews were conducted until saturation is achieved. Saturation was gauged by using Glaser and Strauss's (1967) definition of the concept: "seeing similar instances over and over again, that the researcher becomes empirically confident that a category is saturated" (p. 61). However, there is a possibility of saturation not being achieved in the study, and I may remain unaware of the types of categories that can emerge from data collection (O'Reilly & Parker, 2013). If saturation is not achieved, I achieved quality through transparency of the overall approach and findings (O'Reilly & Parker, 2013).

### **Summary**

The purpose of this study is to reveal the nature of the triage nurses' experience and the factors associated with assigning acuity levels. The findings should fill the

current gap in the research on the influence of different factors on triage acuity decisions. Because EDs are often overcrowded and places where errors occur frequently, identifying areas that may improve triage decision-making and acuity designations is important to maintaining patient safety. The findings of this study should contribute to future improvements in the design of the ESI to increase safety and accuracy of triage assessments.

## Chapter II: Literature Review

### Introduction: Literature Search

The body of research on decision-making is large and complex. The thorough search of the relevant published literature on clinical decision-making in EDs is reflected in the diagram shown in Appendix A. A summary of the literature review findings is in the evidence matrix of Appendix B.

The literature was searched for variables that influence RNs' clinical decision-making in ED triage assessments. Because the ESI, which is the decision algorithm most widely used in this context, was significantly changed in 2003, the literature search encompassed the 14-year period since that update: 2003–2017. Five databases were searched: PubMed, CINAHL, PsychINFO, Embase, and Google Scholar.

**Keywords used.** The keywords consisted of the following: emergency, emergency nurse or nursing, triage, decision-making, clinical decision-making, cognitive process, disparities, sociodemographics, perceptions, basis, and stereotypes. Terms combined using Boolean variables are: triage and clinical decision-making, triage and perceptions, triage and stereotypes, triage and bias, and triage and decision-making.

### Inclusion/Exclusion Criteria

Research articles published between 2003 and 2017 with triage nurses as respondents using clinical decision-making in triage were included in this review. The articles had to be written in English and be full-length articles published in peer-reviewed journals. Studies without the specific purpose of exploring nurse processes or decision-making during triage were also excluded due to the lack of relevance to the study reported in this dissertation.

**Findings from the search.** The search resulted in 326 studies, with some duplications across databases. PubMed revealed 92 matches; CINAHL, 134 matches; PsychInfo, 56 matches; Embase, 13 matches, and Google Scholar, 31 matches. As outlined in the PRISMA diagram (see Appendix A), 119 records remained after 244 were screened for inclusion criteria through abstract review. Of the 119, 12 peer-reviewed journal articles met inclusion criteria. One study was excluded as it was conducted in Taiwan. Of those included, six studies were qualitative (Andersson et al., 2006; Arslanina-Engoren, 2009; Hitchcock et al., 2014; Roscoe, Eisenberg, & Forde, 2016; Sanders & Minick, 2014; Wolf, 2010) and five were quantitative (Castner, 2011; Chen et al., 2010; Garbez et al, 2011; Schrader & Lewis, 2013; Vigil et al, 2016). Designs used in these studies include three ethnographic studies, two qualitative descriptive studies, and one qualitative fieldwork. The quantitative studies consist of two retrospective studies, one prospective study, two cross-sectional.

**Review of literature: Introduction.** Endnote was used to identify duplicate studies and to organize studies chronologically. Articles were examined using the matrix method described by Garrard (2016). A spreadsheet was created that categorized every article in alphabetical order by first authors' last names (see Appendix B). The citations, purposes, designs, sample descriptions, variables, and findings of each study were included.

The study findings were categorized into clinical decision-making themes by the author in the context of triage assessments. The themes were information obtained, environment, education, experience, intuition, beliefs or perceptions, and race or ethnicity

(see Appendix B). Many of the studies reported findings in more than one of the above themes.

### **Information**

Informational factors reported by research to affect nursing triage acuity decision-making include vital signs, chief complaint, medical and family history, patient appearance, and initial patient appearance when presenting to the ED. Five studies reported that nurses use information obtained from triage to complete an acuity assignment. Four found that vital signs and pain play a critical role in acuity assignment (Arslanian-Engoren, 2009; Castner, 2011; Garbez et al, 2011; Roscoe et al., 2016; Wolf, 2010). In the study by Garbez, et al., nurses identified vital signs as a significantly important factor influencing patient acuity assignment.

Three identified chief complaint for the patient as a factor considered in acuity decisions (Arslanian-Engoren, 2009; Garbez et al, 2011; Wolf, 2010). These studies suggest that chief complaint is the most important factor related to acuity assignment. Additionally, one study found that the “intensity” of the complaint was also important in the determination of triage urgency status (Arslanian-Engoren, 2009). Three studies found that medical history was a significant factor affecting triage decisions (Arslanian-Engoren, 2009; Castner, 2011; Garbez et al, 2011).

Garbez et al. (2011) found a correlation between experience and medical history. The authors found that nurses with four or more years of triage experience were 2.27 times more likely to select “patient medical history” as an important factor when deciding than were triage nurses with less than four years of experience (p. 530). Three studies also reported patient appearance was a factor (Arslanian-Engoren, 2009; Roscoe et al.,

2016; Wolf, 2010). The authors found that the way a patient presented to the ED also affected acuity assignment. Respondents described relying on how the patients “look” and “how they presented” as an important factor when assigning acuity (Arslanian-Engoren, 2009; Roscoe et al., 2016; Wolf, 2010). In one study, nurses reported that they could distinguish the “sick” patient from the “not sick” patient on the basis of presentation (Wolf, 2010, p. 238).

### **Environment**

Environmental factors reported by research to affect nursing triage acuity decision-making include disturbances and overcrowding. Four studies identified environment as a factor in triage acuity decisions (Andersson et al., 2006; Roscoe et al., 2016; Hitchcock et al 2014; Wolf, 2010). Andersson et al. (2006) found that the triage environment was sometimes unsatisfactory with lots of disturbance in the form of “intoxicated persons, telephone calls and people trying to force a place in the line-up” (p.142). The work environment of the triage process was somewhat of a phenomenon in itself because it was complex and described as chaotic by triage nurses (Andersson et al., 2006). Hitchcock et al. (2014) identified issues of overcrowding as affecting the triage acuity assignment, this was echoed by Roscoe et al. (2016), who found that overcrowding influenced how nurses listened to patients in triage. Wolf (2010) also found that environment was an unacknowledged factor in decision-making during her observations; this was frequently observed in the triage process.

### **Education**

Nursing knowledge was identified as an important source of information while in triage by three authors (Arslanian-Engoren, 2009; Hitchcock et al., 2014; Chen et al., 2010). A quantitative study by Chen et al. (2010) found that professional certification, triage education, and the place where nurses received education correlated with predictors of competency in acuity decisions in triage. Additionally, Hitchcock et al. (2014) identified education of triage nurses appeared essential to providing a high level of care. Hitchcock et al. (2014) also state that the level of knowledge of the triage nurse had the potential to affect patient assessment, outcomes, and professional relationships among team members. In the study by Arslanian-Engoren (2009), nurses consider their knowledge as an important tool when prioritizing and determining the underlying cause of the patient's complaints.

### **Experience**

According to the findings of seven researchers, experience is noted as a key factor for accurate acuity assignment (Sanders & Minick, 2014; Arslanian-Engoren, 2009; Garbez et al, 2011; Roscoe et al., 2016; Andersson et al., 2006; Hitchcock et al 2014; Chen et al, 2010). Andersson et al. (2006) found that length of experience and training varied among the nurses in this study; no differences were shown in their assessment, but experienced nurses viewed themselves as having more courage and faith in themselves. Hitchcock et al. (2014) found that varying levels of experience influence triage decisions and experience increases this accuracy. Arslanian-Engoren (2009) found that nursing experience is an important source of information in determining the underlying cause of the patient's complaint, and aids in appropriately assigning acuity. Respondents

overwhelmingly indicated that their “experience” was important because they believed that “you can look at any book and read all kinds of stuff, but it’s your experience” that was important (Arslanian-Engoren, 2009, p. 54). Chen et al. (2010) found ESI levels were affected by years of experience as a nurse, years of experience as a triage nurse, and a nurse’s place on the clinical ladder all correlated with accuracy. Roscoe et al. (2016) determined that past experience is an important factor in accurate acuity assignment in triage. Sanders and Minnick (2014) found that experienced nurses' decisions are informed by the knowledge they have gained through experience and by connecting with individual patients. Furthermore, expert nurses can grasp immediately the salient features of situations in their proper contexts and use this experience when differentiating between emergency and urgent cases. Garbez et al. (2011) found that the most significant finding of their study was that experienced triage nurses use different criteria for decision-making than do less experienced nurses. It was found that experienced nurses do not rely on isolated factors such as chief complaint, and they do not follow a “cookbook” algorithm; they base decisions on prior experience (Garbez et al., 2011, p. 531). More experienced triage nurses used targeted, specific patient data in their decision-making to create a complete assessment of the patient.

### **Intuition**

Intuition is defined as an instinctive method of thinking, acting, and using common sense (Cioffi, 2001). Cioffi (2001) further defines intuition as a natural feeling when assessing the patient’s condition when the clinical status is unclear. Three researchers found that intuition was a factor used in triage decision-making (Sanders & Minick, 2014; Roscoe et al., 2016; Andersson et al., 2006). Andersson et al. (2006) found

that intuition plays an important role in triage when assigning acuity. In the study by Andersson et al. (2006), nurses referred to intuition as a “sixth sense” (p. 142). Roscoe et al. (2016) used the term “gut feeling,” however, they used the term interchangeably with “intuition” when discussing triage acuity decisions (p. 1161). Sanders and Minnick (2014) defined intuition as “reading between the lines” and felt it was an important factor in acuity decisions while in triage. Respondents in their study felt that triage nurses are guided toward making correct triage decisions by intuition.

### **Beliefs or Perceptions**

Two authors comment on the triage nurses’ perceptions and beliefs, and how they found these factors influence acuity decisions in triage (Arslanian-Engoren, 2009; Wolf, 2010). Arslanian-Engoren (2009) found that triage nurses attitudes and beliefs surrounding the believability of the seriousness of a patient complaint affected acuity assignment. If a triage nurse felt the “story was not believable,” the patient would be under-triaged (p. 56). The author did not specifically define perceptions; the author only stated that the study provided a window into the “biases and stereotypes that some nurses hold and that may interfere with the timely delivery of emergency cardiac healthcare” (Arslanian-Engoren, 2009, p.54). Wolf (2010) found that nurses’ perceptions of body habitus influenced triage acuity. Patients with extremes in body size were perceived by the triage nurses to be less acute. If the patient was overweight or emaciated, the triage nurse felt this meant the patient did not have an acute “emergent” situation but more of a chronic health problem, and therefore, the patient was under-triaged for a similar complaint of an average weight adult and given a lower ESI level from the triage nurse.

### **Race or Ethnicity**

Three authors found that race or ethnicity was a factor used in triage acuity (Schrader & Lewis, 2013; Vigil et al, 2016; Arslanian-Engoren, 2009). Arslanian-Engoren (2009) found that triage nurses consider “culture” or “cultural orientation” of the patient when making decisions. For example, one respondent indicated that the “Asian population or Hispanic are very demonstrative,” believing that the “whole spectrum [of individuals] outside the [dominant culture], American way of life are generally more histrionic with their whole way of activity [presenting to the ED with] arms [waving] in the air” (p. 54). Vigil et al. (2016) completed a quantitative retrospective study that examined provider-driven factors that affected ESI acuity assignment levels. This study found that Caucasian patients had received higher priority ESI ratings than African American patients. Caucasian patients with low to moderate heart rates also received higher priority ESI scores than did the African American, Hispanic, Asian American, and mixed-ethnicity patients. In another study, Schrader and Lewis (2013) sought to determine whether racial disparities existed in the triage process at an urban, high-volume Level 1 ED. The results supported the existence of disparities. In particular, African Americans were triaged 2–3 levels below the matched Caucasian group and were twice as likely to be triaged to a lower acuity ( $N = 1,346$ ) than to a higher acuity ( $N = 588$ ) than Caucasian patients.

### **Relevant Theory**

Effective clinical decision-making is among the most important skills required by healthcare practitioners. Hammond’s (1988) Cognitive Continuum Theory (CCT) is a model of human judgment and decision-making, and it is aimed at orienting the decision-

making processes. CCT embraces the various explanations of the decision-making detailed in nursing literature (Cader, Campbell, & Watson, 2005). According to this theory, judgments and tasks are linked to cognition, and decision-making is based on six broad modes of inquiry that exist on a continuum, with intuitive judgment on one end and scientific thinking (analysis) on the other. The six cognitive modes are scientific-experiment mode, controlled-trials mode, quasi-experimental mode, system-aided mode, peer-aided judgment, and intuitive-judgment mode (Hammond, 1988). Cader et al. (2005) analyzed and evaluated the CCT by using the criteria identified by Fawcett's framework and classified the theory as a midrange descriptive theory: It is a theory that focuses on judgment and decision-making and provides a framework for concepts of task (ill-structured to well-structured tasks) and cognition (analysis to intuition). The intuitive-cognitive process is used for ill-structured tasks, and the analysis mode is used for well-structured tasks. This is important to note because triage is performed in both structured and unstructured manners.

CCT is used by many disciplines to explain decision-making and can contribute to the understanding of triage nurses' clinical decision-making (Cader et al., 2005). Nursing experience, pattern recognition, clinical information, intuition, and perceptions are characteristics commonly identified in reviews of triage decision-making research and are reflective of intuitive, patient-and-peer, and reflective types of judgment. Cioffi (2001) examined decision-making in uncertain moments, in emergent situations, and in the use of heuristics among nurses with various experience levels. Heuristics are the strategies used to make inferences that are influenced by past experiences. The foci of Cioffi's exploratory and descriptive studies were on how decisions were made in uncertain

situations. Using a descriptive approach, Cioffi (1998) found that nurses, especially the experienced nurses, made more probability-based judgments. A bank of experiences or prior clinical experiences influenced the nurses' decision-making and their use of probability judgments (Cioffi, 1998).

While the ESI demonstrates reliability and validity in various samples of ED patients, the focus of the guidelines is on the objective or physiological systems exhibited, the time to see the providers, and the resources needed. The accuracy and consistency of triage decision-making in EDs are fostered with an established algorithm. However, analytical decision-making and the process is slow and prone to errors when performed by humans. Intuition is on the other end of the spectrum, and Custers (2013) described it as "quick, robust, and flexible but also imprecise. However, intuitive errors are rare; they occur unpredictably and are often difficult to detect, for a fully intuitive response is subjectively very convincing" (p. 1075). In other words, intuition cannot correct its own errors; thus, discovering previously unrecognized factors that triage nurses may hold that play into their decision-making is crucial to making more accurate and safe acuity designations.

### **Summary**

The literature review has shown the complexity of the triage process. As previously stated, triage nurses must incorporate multiple pieces of information to accurately assign acuity. The results of the review indicate that to assess patients, nurses must integrate the clinical information presented to them while relying on their education and experience and avoiding personal bias in conjunction with the environment of care in which they are practicing. Vigil et al. (2016) and Arslanian-Engoren (2009) noted that

future qualitative research could provide insight into the role that perception plays in triage decision-making. If this type of study were guided by the CCT, more insight into the role of cultural bias might be gained, as noted by Schrader and Lewis (2013) and Wolf (2010), and the findings might have broad applicability that is not limited to the African American population. In this literature review, several vulnerable areas that can lead to errors have been identified. These potential errors that can occur during the triage process can affect the entire journey of patients through EDs and possibly their entire hospital stays. Therefore, it is crucial to further investigate these vulnerable areas in the triage process to improve patient care and safety.

As found in the 11 studies, we know multiple factors influence the clinical decisions made in the triage assessments. As previously stated, the triage process is complex and dynamic, and a nurse may make multiple decisions in his or her interaction with a single patient. Several researchers have concluded that future research should examine the triage process (Vigil, et al., 2016; Wolf, 2010; Garbez, et al., 2011; Arslanian-Engoren, 2009) and include demographic data of triage nurses, perceptions, and the context of triage. Only a few published studies have associated factors with clinical decision-making in the triage process. To increase patient safety and the accuracy of triage assessments, this study addresses the gaps found in the literature specifically about experience and beliefs/perceptions that influence clinical decisions. Moreover, the experience of triage from a phenomenological perspective is understudied. Therefore, the purpose of this study was to investigate the nature of the triage nurses' experience and the factors associated with assigning acuity levels.

## Chapter III: Methods

### Introduction

The purpose of this phenomenological study is to reveal the nature of the triage nurses' experience and the associated influence of their personal values, their beliefs, and the social processes on the assignment of acuity levels. In the following sections, I summarize the methodology and the procedures used to investigate the factors triage nurses consider. In addition, I highlight the information related to my position as the researcher and its potential influence on the research study. I describe the phenomenological attitude, the relevance of the methodology to the goal of the study, respondent information, and ethical considerations.

**Design: Qualitative study.** This study used a qualitative design. Qualitative research does not forecast what may happen in the future; rather, it is an analysis that provides an in-depth understanding of the concept being investigated (Giorgi, 2012). When qualitative researchers speak of subjectivity, they are referring to the ways in which people make sense of their experiences and lives (Munhall, 2001) also referred to as “perceptions” (McDonald, 2012). To understand the perceptions that a given situation has for a person is to comprehend part of that person's reality—that is, to see what is “true” from his or her perspective (Munhall, 2001). Since qualitative researchers are most interested in subjective meaning rather than facts makes this design desirable for understating the perceptions that nurses inhabit while conducting their triage assessments.

**Approach: Phenomenology.** A phenomenological research methodology was chosen because, according to Giorgi (2012), “Phenomenology wants to understand how phenomena present themselves to consciousness, and the elucidation of this process is a descriptive task” (p. 6). Therefore, to describe the lived experience of triage nurses’ perceptions of patient social phenomena during triage decision-making, the phenomenology method was used. Strauss and Corbin (1998) define this approach as “a way of thinking about and studying social reality,” and according to them, a method is “a set of procedures and techniques for gathering and analyzing data” (p. 3). I chose this approach to help identify the meaning behind the human experience as it related to a phenomenon (Creswell, 2014). The phenomenon of interest is how nurses use factors to assign acuity in triage. Phenomenology is aimed at obtaining detailed insight into these experiences by examining the consciousness of the experiencer.

Phenomenology is used extensively in research from the fields of sociology, psychology, health sciences, and education (Creswell, 1998). Through this approach, I was interested in showing how complex meanings are built out of direct experience. I chose phenomenology to help examine the accounts of lived experiences from which general meanings are derived (Creswell, 1998).

In phenomenological research, it is important not only to communicate the methodology and the phenomena being studied but also to explain the steps of the investigation (Heinonen, 2015). In this study, van Manen’s (1990) method for conducting phenomenological research was implemented. According to van Manen (1990), conducting a phenomenological study is about searching for the means through which a person experiences the world. In the present study, the phenomenological writing aspect

of the hermeneutic phenomenological work is important because it helped to attain the research goals and to create meaning in certain aspects of nurses' lived experiences, which are made coherent and comprehensible through reflections (van Manen, 1990).

Using van Manen's (1990) method necessitated an obligation to transcribe the development of investigation and consideration. I used the following procedures of van Manen's (1990) phenomenological method:

1. Identify the nature of the lived experience: I achieved this by conducting a literature review that oriented me to the phenomenon, helped me to formulate the purpose, and helped me explicate my assumptions and pre-understanding.
2. Conduct existential investigation: The outcome of the literature review and data collection helped me perform the existential inquiry. My personal experience was the first step for the research, which was followed by a continuous attitude to explicate etymological sources, idiomatic phrases, and experiential descriptions from the subject and the literature. I managed to achieve this by bracketing my experience with this phenomenon and highlighted in the section "role of the researcher."
3. Phenomenological reflection: The next step to phenomenological reflection was to conduct a thematic analysis and determine existential themes. The literature review, coding, and interpreting the data helped me to achieve phenomenological reflection, which is further explained in the data analysis plan.
4. Phenomenological writing: The last step involved interpreting and describing the findings of the investigation. During this phase, I (as the researcher) was

particularly attentive to certain languages, statements, or feelings in the remarks in the subjects' responses.

**Role of the researcher.** In a hermeneutic phenomenological study, the researcher serves as the principal data-compilation tool (Matua & Van, 2015). The researcher moves beyond his or her personal view of the meaning of the phenomenon being studied—that is, he or she must become transcendental (Matua & Van, 2015). In this study, I utilized two means to achieve truthfulness described by Heinonen (2015). First, I consciously moved beyond my personal biases and assumptions about the phenomenon by acknowledging my understanding of the phenomena. I accomplished the phenomenological reduction by bracketing my assumptions. Secondly, bracketing helped me to not make hasty decisions or draw personal opinions. In particular, I wrote short descriptions of my life experiences, which established a precise and essential background that led to the development of my understandings. Based on recommendations from authors Heinonen (2015) and Matua & Van (2015), the details of my account were the outcome of my contemplation of my experiences in triage that laid the foundation to my understanding of the phenomenon. These areas represented the underpinning of my prior understanding of the phenomenon and my involvement with the phenomenon. Thus, by bracketing my known biases and assumptions, I avoided justifying the study results that supported my personal perceptions about the phenomenon.

In addition, researchers can accomplish bracketing by engaging in discussions with an associate to examine their prejudices regarding the phenomenon (Heinonen, 2015). Furthermore, researchers can create accounts of their experiences during the data collection to offer the experience that helped form the perceptions related to their

experiences. I discussed my assumptions of the phenomenon in depth with my committee chair before beginning any data collection. I continued to examine my knowledge of the phenomenon during the study by recording my understanding in a diary.

### **Sampling, Subjects, and Setting**

#### **Sample**

According to van Manen (1990), in phenomenology, the research subjects must have experiences with the phenomenon being studied, and the sample should represent the population. In this study, the population consisted of nurses who have experience in conducting triage in EDs. This study used a purposive sampling strategy. Purposeful sampling helped me identify the individuals who have experiences of the details of the phenomenon to be studied (Converse, 2012). Given the study used purposive sampling, I minimized selection bias by pooling respondents who met eligibility requirements. From the pool, I randomly selected respondents until saturation was obtained.

In phenomenology, the intention of sample selection is not to establish validity but to ensure that a thorough and exhaustive appreciation of the phenomenon through the respondents is met (Converse, 2012). The sample size in a phenomenological study must meet two main criteria: The sample must have an adequate number of people to understand the relevant phenomenon, and it must be small to allow the precise circumstantial consideration of the data (Converse, 2012; van Manen, 1990). Matua and Van (2015) believe that the purpose of qualitative research is to find an equilibrium between the personal understandings of the experiences and the depiction of the life experience of the respondents. That is, the number of persons in a sample is not as significant as the need to capture the completeness and distinctness of the phenomenon

accurately and sufficiently (Converse, 2012). The below three criteria guided the selection of the subjects:

- Respondents are nurses who are licensed to work as RNs.
- The nurses have conducted triage in EDs and have been performing the procedure for at least one year
- The respondents are proficient in English.

For this study, the sample size was based on three factors: the level of saturation, the homogeneity, and the variety of experiences (van Manen, 1990). The degree of saturation is significant in deciding the suitable sample size of a qualitative study. Saturation is achieved when additional data is no longer needed to uncover the details of the phenomenon. It has been documented that saturation is often met in qualitative studies with five or ten respondents (van Manan, 1990). I aimed to complete eight interviews for this study.

Subjects were recruited from the Emergency Nurse Association (ENA) database list. The ENA is a professional organization that represents ED nurses. Given that prior literature is limited to studies involving respondents within a single geographic location, this study obtained a sample from multiple locations across the United States—at least two eligible respondents from each U.S. Census Bureau geographic region, with one each representing a rural and urban area. Designation of rurality is based upon the 2010 U.S. Census Bureau definition in which any population cluster with a population less than 50,000 is considered rural with all other areas considered urban. I obtained the list of ENA members who have an email address on file. Email address and zip codes were obtained. I split the list into the U.S. census regions based on state, and further split

email addresses within each region into rural and urban location based upon zip codes. Then I randomly selected one rural and one urban email address from each region and invited them to participate in the study. Random selection was continued until one urban and one rural respondent consented from each region (Appendix C).

Respondents were encouraged to use pseudonyms to protect their identity. The respondents were only referred to by their pseudonym and their contact information was placed under the pseudonym. Demographic information such as age, years of experience in triage, geographical area, and type of ED was collected for each respondent. The list from ENA contained 1,000 experienced triage nurses from across the United States.

### **Instrumentation**

The principal aim of phenomenology is to ascertain and highlight the perceptions of the respondents (Matua & Van, 2015). In the present study, data consisted of the transcriptions of semi-structured interviews (see Appendix E). Probing questions were used to clarify the shared information and to obtain deeper and broader details of the responses to the structured questions.

Extensive interviews are considered the principal method of gathering data for a phenomenological study (Converse, 2012; Davidsen, 2013; Heinonen, 2015). According to Converse (2012), in a phenomenological research study, the investigator functions as the primary data-collector. Respondent interviews were used to collect data that convey distinct experiences or insights of the phenomenon being studied (Heinonen, 2015). I attempted to have the respondent explain and discover these experiences through the interview process. An interview protocol (Appendix F) guided the interview process (Matua & Van, 2015).

## **Data Collection Protocol**

The interview questions were prepared during an independent study course that was supervised by the dissertation chair. Questions were developed in collaboration with two experienced qualitative researchers, one of whom has extensive experience in the field of social perceptions. The questions were field tested with two ED nurses to ensure understandability. It was important to maintain rapport to encourage nurses to describe their experiences. Therefore, I spent some time before the beginning of each interview to chat with the nurse informally to promote comfort. In the interviews, nurses were encouraged to provide examples of their experiences, and express their responses freely.

Predetermined questions enabled standardization of the sequence and wording of the questions (Converse, 2012). Uniform and open-ended interview questions were more organized, efficient, and useful for reducing bias (Heinonen, 2015). Furthermore, this encouraged the respondents to answer interview questions openly and in their own words (Davidsen, 2013; Heinonen, 2015). Subjects' responses to open-ended questions allowed me to gather details on their personal opinions and values that defined their experiences. Furthermore, the predefined questions helped me cover topics that are necessary for the study. All interviews were digitally recorded and transcribed verbatim. Field notes were kept during the interviews while considering respondents' verbal expressions (Matua & Van, 2015). In the phenomenological method, I not only collect the data but also become a companion who participates with the subjects as a coinvestigator (Converse, 2012; Matua & Van, 2015). Interpretative hermeneutic phenomenology supported the use of open-ended questions that allowed the respondents to provide responses spontaneously

and promote the intensity and abundance in their expressions of the phenomenon (Converse, 2012; Davidsen, 2013).

At the scheduled interview date and time, the study respondent was called, when they answered the phone, I confirmed they had sufficient time to continue with the interview. I started the recorder and followed the interview guide (Appendix E). Human subject information was reviewed, and verbal consent obtained to continue the interview. When the interview was over, I thanked them for participating and asked if there was any other information they would like to share, turned off the recorder and ended the call.

Recordings remained on an encrypted and password-protected flash drive. Interview recordings were transcribed by a research assistant within 48 hours of the interview. Each transcription was verified for accuracy by the investigator listening to the interview recording while reading the transcript and making corrections when appropriate. Pauses, laughter, and other non-verbal moments in recordings were included in the transcription at the point in which they occurred. A detailed audit trail (steps actually taken, their timing, any significant decisions or changes to interview questions, etc.) was kept ensuring protocol integrity and facilitate recall during analysis and dissemination.

As recommended by van Manen (1990), a single lead question was used to begin the interview. The principal question used in this study was “In general, what types of patients visit the emergency room?”

The following important principles were used to ensure effective interviewing (van Manen, 1990):

1. Be patient and quiet as needed, carefully listen, and maintain a calm attitude to help the respondents uncover their experiences.
2. Rehearse effective communication skills by carefully listening, clarifying, and paraphrasing what was heard.
3. Focus on the principal question and deliberate on ways particulars of the respondents' responses will achieve the purpose of the study.
4. Clarify with the respondents the reasons why they explained important concepts in the manner they did. These insights are crucial to revealing the rationale of the respondents' lived experience and expose the phenomenology.

### **Data Saturation**

Obtaining data saturation is significant and crucial in phenomenological research. Data saturation is reached when a researcher determines that there are no more additional findings in regard to the objectives of the research (Sargeant, 2012). Interviews were continued until no new concepts or experiences arose in the interviews as identified during coding following each interview.

In addition, to ensure that accurate and adequate data are collected, I initiated data analysis after each interview was transcribed. I immersed myself in the data during transcription verification and coding to identify themes. During the interviews, I was continually paraphrasing to further determine whether accurate data had been collected from the respondents. Throughout the data collection and data analysis, I ensured that the information is both "rich" in regard to character and "thick" in terms of the amount; this was done via probing questions to ensure that respondents have nothing more to add (Burmeister & Aitken, 2012; Fusch & Ness, 2015).

## **Data Management**

During data collection, I used a back-up recorder to ensure that no data was lost; the original recordings and back-up recordings was done on separate Olympus recorders. I used a speakerphone with the recording devices placed near the phone's speaker. This system was tested and confirmed to obtain high-quality recordings. Immediately following each interview, the audio recordings were stored on a password protected and encrypted laptop and flash drive. Once transcription was completed and verified, the recordings were deleted from the laptop. Verified transcriptions were uploaded into Dedoose; they were not saved on a laptop or flash drive. Dedoose (Version 6.0.19, Los Angeles, 2014), a web-based software program designed to support researchers with qualitative data management, coding, and analysis, was used for data analysis. Dedoose ensures security using a Hyper Text Transfer Protocol (HTTPS); Dedoose is HIPPA compliant. Dedoose allowed blind coding, thereby enabling different authors to independently code and compare data.

## **Data Analysis**

A thematic analysis was conducted throughout the study. The analysis of data began when the interviews were in progress, during the transcriptions, and following the transcriptions, via reading, rereading, writing, rewriting, and elucidating the transcripts (Davidsen, 2013). During the interviews, I frequently checked with the respondents to ensure that the respondents' descriptions of their experiences are captured accurately, a process that is known as member checking. During this process, checking the respondents provided the opportunity to acknowledge or change the details recorded (van Manen, 1990).

Two research team members C. C and S. T independently analyzed the first two interviews by coding transcripts and identifying codes. These codes were then reviewed by the research team members, then discussed and a common code was applied. For example, one team member used the code “feelings” and the other team member used the code “nurse behavior”. This code was discussed, and the identified code applied was “attitude”. The first two interviews were used to develop the coding scheme and cluster similar responses. Codes were routinely reevaluated to ensure consistency and to identify codes needing clarification. The two team members applied the final coding scheme to the remaining transcripts and discrepancies were resolved by discussion. After all transcripts were analyzed, I summarized codes into major themes and subthemes. After the themes and subthemes were created, I developed a final thematic framework and identified exemplary quotes relevant to each theme (Appendix G).

### **Trustworthiness**

The accurate representation of findings is fundamental to this qualitative research (Sanjari, Bahramnezhad, Fomani, Shoghi, & Cheraghi, 2014). To represent the conclusion of the study, I ensured that trustworthiness or credibility, reviewability or auditability, and fittingness or appropriateness are maintained (LoBiondo-Wood, Haber, Berry, & Yost, 2013). Methods for ensuring credibility in this study were achieved through the following methods (Friedman & Frederickson, 2014): (1) recording a journal that complements the interviews during the interviews, (2) summarizing responses at the end of each interview for confirmation of content and interpretation, and (3) analyzing the data by repeatedly paying attention and listening to the tapes, by appraising and frequently reviewing the texts, and by documenting and examining the data until fullness

or completeness was reached. As discussed in the methodology chapter, a detailed audit trail (steps actually taken, their timing, any significant decisions or changes to interview questions, etc.) was kept ensuring protocol integrity.

### **Ethical Considerations**

Approval for the study was obtained from Idaho State University's Institutional Review Board, and verbal informed consent was obtained from each respondent before the interviews. Study and consent information were provided in written and verbal format (Appendix D). Verbal consent was obtained prior to the interview starting. Subjects were reminded they could stop the interview anytime, they were asked to use a pseudonym to protect anonymity during the recorded interview, and they were instructed not to state the specific hospital or organization where they were employed or where previously employed when reflecting on interview questions.

### **Summary**

The primary goal of this chapter was to specify how the insight into the nursing experience was collected. The purpose of this study is to reveal the nature of the triage nurses' experience and the factors associated with assigning acuity levels. Using the process of hermeneutic phenomenology, I analyzed the phenomenon and sought to understand how nurses experience the triage process and how their perception of the experience influences the acuity designations. In this chapter, the theoretical and chronological foundations of hermeneutic phenomenology, and its importance to the respondents in the study, was explained. The research design, role of the researcher, methodology including data collection and data analysis techniques, and ethical concerns, were discussed. Furthermore, issues with trustworthiness and data collection were

highlighted. Overall, the findings of this study may provide information that can support the triage process and promote practice reforms and advances in the quality of nursing care.

## Chapter IV: Results

### Subject Characteristics

A total of nine interviews (n=9) were completed, lasting an average of 56 minutes. The proposed sampling was for there to be eight interviews. However, the first completed interview contained minimal data. Thus, a ninth interview was completed, matching the same selection criteria as that of the first respondent. All respondents were triage nurses and worked in triage a mean of 15.7 years (SD 10.5 years); 55% (5) were urban EDs, two level 1 trauma centers, three level 2 trauma centers, two level 3 trauma centers, and 45% (4) were rural EDs (non-trauma centers). Eight respondents were female, and one was male, median age was 39 years (range 29 – 54).

**Results.** Saturation was met by the sixth interview. However, to ensure saturation and allow representation of all regions, I continued with the three remaining planned interviews. The iterative data analysis process resulted in three major themes: The paradoxical process of triage, decision-making within chaos, two sides of the labeling “coin”. Selected quotes from respondent interviews are displayed in italicized text below.

**Theme 1: The paradoxical process of triage.** There was a paradox described in which triage nurses focused intensely on the patient to assign a triage level yet in doing so had to also be aware of the entire ED environment. This was particularly noted when describing the triage process.

The process of triage was consistent among all the respondents. Each nurse spoke about assessing patients and determining the priority of care and how they decide what information is important. The process of triage is complex—nurses discussed in detail how they must be aware of their surroundings at all times—and the need to focus on a

patient while also being aware of other elements occurring with the ED. All nurse respondents discussed how they are required to be aware of the presenting patient as well as the status of the ED in terms of patient flow, staffing levels, and patient acuity. While taking patient histories, nurses describe quickly putting together an accurate picture that matches the history with a visual assessment and labeling potential problems. This process was broken down into objective information and subjective information collected.

**Objective.** Nurses cited past medical history, resources required to treat, and vital signs as the most important factors to objectively assign an ESI level. *“History with the patient, makes a major decision on the acuity that’s assigned.”* All the respondents felt that history would influence their decision and, in fact, would change the ESI level. Resources were also cited as an important factor in determining the appropriate ESI level. Respondents felt the ESI level would be influenced if they thought the patient would be undergoing imaging or laboratory tests; these considerations would increase the patients ESI level. *“I increase levels because they’re going to require more, resources, labs, and staffing.”* Vital signs were also cited by every respondent as a decision cue used in triage. Interestingly, blood pressure, pulse and respiratory rate were regarded as more important to decisions than pain in every interview obtained. Nurses felt vital signs were *“objective”* and if there was any *“hemodynamic instability”* the patient’s acuity would hinge on this, not the patient’s pain level. Two nurse respondents discussed how they have been pressured by administration of the hospital in the past to increase ESI levels based on pain levels. *“If a patient has a pain level of 7 or more, we are told to increase*

*the triage level, however I do not feel comfortable doing this when pain is subjective and doesn't match the patient's presentation."*

**Subjective.** Nurses in the study identified two subjective factors as important to decision-making on the ESI - patient appearance and chief complaint. Patient appearance was cited by every respondent as an important factor, *"Sometimes it's, you know, something as subtle as a little change of skin color or how they're holding their, their body, that type of thing."* Nurses use a variety of mechanisms to assess patient problems. A visual assessment can be as critical to the process as getting a verbal history. Nurses are constantly assessing to see if the patient's physical appearance matches the story they are telling.

*First of all, appearance. Are they able to walk to the triage booth independently? Are they limping? Are they out of breath? So, physical presentation is a huge one, you know. Are they blue? Trying to get themselves into my chair. And also, presentation is, who are they with?*

Chief complaint was also cited by every nurse respondent in the study. Chief complaint was cited as one of the most important decision-making factors when a patient presents to the ED. The nurses in this study frequently used *"chest pain"* and *"abdominal pain"* as important complaints that would help them determine an ESI level. *"I use the ESI level based on their complaints to assign an acuity level."*

In addition to assessing patient complaints, triage nurses are simultaneously trying to determine the need for further assessment and initial symptom management, particularly for patients triaged to the waiting area rather than back to the ED examination rooms. All nurse respondents felt that subjective presentation of the patient almost always affected their triage decisions.

**Theme 2: Decision-making within chaos.** Overall, decision-making was described as chaotic with multiple factors contributing. Decision-making was the key function of triage nursing described by the respondents. Decision-making was described as the ability to assess the patient accurately and then determine the next step in their care. The decisions that the triage nurse makes can adversely affect not only the patient's outcome but also the function of the ED. Stressors that affect the triage decision-making include patient volume, experience, and an intuitive sense that "something is wrong."

**Patient Volume.** Overcrowding in the ED was cited as a common problem. All respondents discussed how many of their triage decisions are made based on the patient volume and how personally stressful overcrowding of the ED is while making decisions.

*I also see a huge difference, busy days, we tend to have poorer triaging, because they're just trying to get through everybody. Whereas when it's not as busy and they spend more time with each patient, they get a much more accurate triage level.*

One of the nurses described patient volume in the ED and how it "cannot be controlled as it can be on the floors and units of the hospital." As a result, the nurse describes how patients continue to enter the system and continue to add stress on the staff and the ED. When the volume becomes excessive, triage nurses described having "an increased responsibility of placing an acutely ill patients back into the waiting room because there is no room available in the ED." When the triage nurse is legitimately concerned about a patient, this affects their decision-making and utilizing the standard ESI algorithm, "If I am concerned about a patient I will just make the decision to increase their ESI level regardless of the algorithm, just, 'cause you know, I don't want them sitting in the lobby under my license."

**Intuition.** Six out of the nine nurses described a situation in which they knew that something was seriously wrong with a patient, but they could not explain why they knew. *“There’s definitely times where you can just sense, like, hey, something maybe more wrong than what the ESI level is indicating.”* None of the triage nurses could explain what it was that made them make the decisions that they did. It was often described as *“something didn’t sound right”* or *“something didn’t look right.”* They described *“just knowing.”* While analysis was a critical part of the process, intuition or a “gut feeling” seemed to have a significant influence over acuity decision.

*There’s huge nursing intuition, and I think that’s part of why some patients are not triaged appropriately, because you, kind of, have to have that critical thinking and that nursing intuition when you assess a patient. And novice nurses who haven’t really developed that sixth nursing sense yet.*

Respondents felt that intuition is imperative when the ED is overcrowded and chaotic. One respondent referred to knowing *“quickly, just by looking at a patient if they need to go back (to the ED) or can wait in the lobby, which saves time.”* One respondent reported that *“I’m in a rural setting, so, um, we’re the only hospital in... within a probably 30-mile radius, um, so especially during the flu season, then absolutely when crowded we absolutely rely on intuition.”*

**Experience.** Experience was cited in every interview completed as a common factor used for ESI decision-making. Experience was described by the nurses as “time in triage.” Some nurses felt that experience equated to more accurate triage acuity decisions.

*I think a lot of it, comes down to experience, as well. I know there’s, like, a set algorithm with ESI, but, um, some of that can be challenging to, to follow, because it might, um, just having a sense of, like, hey, this person could be, potentially, more sick than what, vital signs are leading on.*

Five of the respondents used the term “novice” when referring to nurses who had minimal experiences as a nurse or as a triage nurse. *“Somebody who is a novice in triage and a novice to nursing... they’re going to miss those subtle cues.”* While three of the respondents felt that experience may hinder decisions because these nurses tend to “*work off prior experiences*” when making ESI decisions.

*I think that experience can help, but it also can hinder because I find that the more experienced nurses usually... especially in an ER setting, the more jaded they have become, and everybody’s fine.*

However, all the nurses who were interviewed viewed themselves as experienced nurses and expressed that they had “*less doubt*” of missing subtle findings and under-triaging patients as compared to novice triage nurses, especially when the ED is crowded or chaotic and there is limited time to make accurate acuity decisions.

**Theme 3: Two sides of the labeling “coin.”** There were two conflicting uses of labels assigned to patients. Respondents identified multiple labels that categorize the complex patient signs and symptoms. The triage nurse then utilizes those labels to communicate their evaluations to other care providers. As a communication technique, respondents reported labels of the ESI level to express acuity and patient characterization. Examples of these labels were based on a color that correlated with the levels of the ESI level such as “*blue dot*” for a level 4 on the ESI or “*yellow dot*” for a level 3 on the ESI. Interestingly, nurses used a whole system other than the standardized ESI labeling algorithm which is expressed in numbers and not colors.

Labels also included diagnosis such as “*cancer patient,*” “*psych patient,*” or “*sickle celler.*” Triage nurses describe how they have developed a triage language and labeling these patients not only expresses the acuity of the patient in the waiting room but

simultaneously characterizes the patient. Triage nurses feel that using labels is somewhat of a “*shorthand*” and they are able to explain the patient “*in one-word.*” Labeling in triage was seen as a communication method yet was viewed as a limitation to objectivity and thoroughly assess. Four of the triage nurse respondents reported the labels as a limitation to providing unbiased care. These four nurses felt labels limit the healthcare professional’s ability to see the patient objectively and referenced derogatory labeling as a common practice in the ED triage setting.

*Patients that are frequent users of the emergency room also can have something really severe going on and I think that the labels sometimes will prevent them from seeing the big picture and they’ll miss things that come through because those are the most, high-risk patients actually even though you feel like, you know, they come in for a lot of minor stuff a lot, but then when something really big comes up, they may not recognize it because they’ve labelled them.*

Nurse respondents also expressed concern over patient labels and missing important information because a patient was assigned a label in triage.

*I think you downscale their complaints, for sure. Because, you know, stuff, like when you cry wolf, you show up so many times with nothing wrong with you, complaining like, you know, something’s wrong, and then when something really is wrong, we’re going to miss it, because we’re going to think it’s bull.*

The nurse respondents also felt pressure from other healthcare providers and would feel “*mocked*” or “*embarrassed*” by colleagues if they followed the ESI algorithm with patients who were labeled as frequent fliers or drug seekers. “*I have been told to under-triage drug seekers and hope that they’ll leave due to long, long waits.*”

However, all the respondent nurses did report under-triaging those with certain labels frequently in their practice. This was a reoccurring report among all study

respondents and was widely accepted as general practice at every ED involved in the study.

*The frequent fliers are under-triaged. I think people get tired of seeing them and so, you know, they don't need anything, they were just here, you know, yesterday, or they were just here two days ago.*

Not only were frequent fliers identified as a common label, but the term drug-seeker was also used frequently and interchangeably with frequent fliers on multiple occasions during the interviews. *“I’ve seen it where there are the drug seekers coming in, wanting, you know, they’ve come in the day before, wanting their Dilaudid, and then they come back the next day wanting the same thing, over and over again.”*

Every respondent used the labels “*frequent flier*” and “*drug seeker*” in the interview. These labels were used multiple times throughout the interview and there was no difference in the use between rural or urban EDs. Another common theme in both rural and urban were “*psych patients*” and “*suicidal patients*.” Both of these terms were used at the same frequency regardless of ED size. When looking at urban EDs a common label used that was not seen in the rural EDs was “*homeless*.” Interestingly, rural EDs did not have different triage language in regard to labels as the urban EDs in this study, labels were universal regardless of region and size of ED.

## **Summary**

Triage is a complex process occurring in a chaotic environment while requiring the triage nurse to be aware of the broader context within a patient focused assessment. The triage nurse uses brief labels to provide quick communication of patient acuity and characteristics to the healthcare team members. These themes of the paradoxical process of triage, decision-making within chaos, and two Sides of the labeling “coin” are

highlighted in the triage nurse narratives of this study. Triage nurse's objective and subjective patient information was regarded as an important factor, as well as patient volume, intuition and experience in making triage decisions. These themes were consistently reported across study sample regions, level of ED and rurality of ED.

Labeling was specifically asked in the interview process to gain a deeper understating of what labels are used and the nurses experience with labels in the triage and triage decision making process. The same labels and their respective definitions were used across the study respondents with the only difference being respondents at urban trauma centers using the labels of "*homeless*" and "*overcrowding*" as factors involved in decision-making, while nurses at rural EDs did not identify these factors.

## Chapter V: Discussion

### The Paradoxical Process of Triage

Respondents in the study described how patients would be assessed using both subjective and objective data to determine the patient's acuity level, while being aware of the entire ED. Triage nurses described that watching a patient before, during, and after the triage process gave them a sense of how acutely ill the patient was and if the presentation was consistent with the complaint offered. Previous literature described the triage nurse focus on the patient to consist of informational factors reported to affect acuity decision-making include vital signs, chief complaint, medical and family history, patient appearance, and initial patient appearance when presenting to the ED (Garbez, et al., 2011; Arslanian-Engoren, 2009; Castner, 2011; Roscoe et al., 2016). Triage nurses in this study did report similar informational items, such as vital signs, patient appearance, and medical history.

**Decision-making within chaos.** Respondents of this study repeatedly spoke about the difficulty related to making triage decisions when patient volume was extremely high. They felt overcrowding was a significant stressor and affected the ability to make accurate clinical decisions. This finding was supported by prior literature, as Hitchcock et al. (2014) and Roscoe et al. (2016) identified overcrowding as a factor related to triage decisions.

Nurses in this study also felt that intuition can change patient outcomes. Nurses from this study used intuition and experience to complement each other when referring to decision cues. They felt novice nurses had not developed this "*sixth sense*" and may miss vague or obscure presentations, especially in times of overcrowding. This finding was not

found in prior literature reviewed, nurses in prior literature describe overcrowding, however not in relation to a chaotic environment or during times of overcrowding, and how they rely on this skill set. Others felt that “novice” nurses stick to the ESI algorithm more closely than the experienced triage nurse. Previous literature validates these findings as well (Hitchcock et al., 2014; Roscoe et al., 2016). Moreover, the descriptions of the expert using intuition and the novice being more rule driven is consistent with the Novice to Expert model developed by Patricia Benner (1984).

Nurses in this study referred frequently to experience and how their experience would influence their triage, and this experience was gained through working in the triage area. Nurses felt intuition and years of experience are what they relied on more due to the chaotic environment. Results reported in both the literature and this study are that expert nurses can immediately grasp salient features of situations in their proper contexts and use this experience when differentiating between emergent and urgent patients and when assigning ESI levels (Sanders & Minnick, 2014; Garbez et al., 2011). It was found that experienced nurses do not rely on isolated factors such as chief complaint, and they do not follow a “cookbook” algorithm, they base decisions on prior experience. Prior literature also supports this finding (Garbez et al., 2011). This study did reveal that some nurses feel “novice” nurses may have more accurate triage acuity levels, and follow the ESI algorithm closer, given limited prior experience, which is not a finding in literature that was reviewed.

**Two sides of the labeling “coin.”** It was a common practice for the triage nurse to assign labels to patients; these labels quickly identified and categorized the patient and used as a communication tool. Interestingly, this study found that nurses were using a

triage labeling system other than the standardized ESI numeric labeling system. As evidenced in the results section, when asked about labeling, nurses did not respond with triage acuity levels, they responded with an internal acuity labeling system in lieu of ESI numerical labels and labels connected to patient characteristics. Triage nurses recognized that labeling patients can cause an unfavorable connotation, however they also used the label to identify groups for whom the healthcare system was failing such as homeless or drug seekers. Additionally, most respondents used labels more because of the expectation to do so from others than their own personal beliefs or attitudes. This is a finding not previously reported in the literature.

Respondents did admit to generally “*under-triaging*” certain groups due to the pressure from other health care providers. Respondents in this study were vocal about labeling and defined labeling in a similar consistent manner.

Triage nurses did discuss bias in relation to certain labels, and literature did discuss this in terms of triage nurses’ attitudes and beliefs surrounding the believability of the seriousness of a patient complaint (Arslanian-Engoren, 2009). This was consistent with the findings of this study in terms of under-triaging based on certain labels, which have a negative association.

Race and ethnicity were found to be a factor for bias (?) in three of the research articles reviewed, it was described as a factor used in assigning triage acuity (Arslanian-Engoren, 2009; Schrader & Lewis, 2013; Vigil et al., 2016). This study did not reveal this same factor. None of the respondents in the study discussed race, ethnicity, or culture as a label or factor related to triage. This may have been because race/ethnic/culture were not

directly asked in the interview; however, nurse respondents may have also felt embarrassed or ashamed to discuss the decision in relation to these factors.

Findings from this study show that nurses do recognize that there are additional factors other than ESI that lead to a final decision on acuity level assignment. Triage occurred within the larger context of the ED using experience and intuition more when the ED was chaotic and labeling was perceived as a 'short hand' for characterizing the patient, more usefully than the ESI system. Some respondents feel they have a great deal of responsibility to rationalize their decisions in triage to the ED team. The nurses were unsure how straying from the ESI algorithm affected the patient and generally viewed the system as a whole, rationalizing the under-triaging of certain labels, as helping the department. While this finding was not directly supported by literature as a general finding, there were findings of under-triaging certain groups in literature related to race/culture and body habitus (Arslanian-Engoren, 2009; Schrader & Lewis, 2013; Vigil et al., 2016; Wolf, 2010).

**Implications for practice.** We know there are multiple factors that impact clinical decisions made in triage. As stated, triage is complex and dynamic, and there are multiple decisions made by a nurse on a single patient interaction. ED triage nurses need to be aware of the factors that influence their clinical decisions when they are assigning triage levels in ED. There is a need to learn about factors that influence clinical decisions to increase patient safety and accuracy of triage from a broader triage nurse population. The findings from this study show that triage nurses have multifaceted roles that can affect the flow of the ED as well as the care delivered. Decisions are based on many different factors and considering these to improve acuity accuracy is essential.

Redesigning the ESI to include factors that are not currently considered could be a way to improve efficiency and accuracy. For example, adding high morbidity complaints (ie... suicidal, chest pain) for an automatic higher ESI regardless of patients visit history could improve accuracy. Another option is to develop an electronic program within the Electronic Health Record (EHR) that identifies objective factors that are present and automatically assigns an ESI, and if triage nurses wish to change the ESI level they will have to submit rationale for the ESI change. Less complex solutions are increasing the number of triage nurses during peak times in the ED to help with patient volume and overcrowding and education with patient examples, real case studies, near misses and sentinel events may increase a nurse's knowledge, accuracy and efficiency.

This study also finds that triage nurses consider similar factors when making decisions; individual nurses develop specific "codebooks" on how they practice and make decisions. Being aware of these practices as a triage nurse is essential for one's practice and developing a formal codebook maybe useful for identifying these factors. Educating nurses about their triage practice, what factors are considered, and how decisions are made is essential to safe patient care. Offering training or education in regard to assumptions and biases that can help with complex decisions in the ED may increase awareness of this practice. Sensitivity training and possibly focusing on psychiatric factors may help deepen the understanding of patients who seek care repeatedly, or for drug seeking behaviors.

It is hoped that the results from this study might inform future revisions of the ESI and increase ESI accuracy. Clinical practice could be improved with consideration of proposed changes to the current system. Developing a system that identifies common

factors used and including these within the current algorithm could lead to improved patient safety and increased accuracy. Educating nurses about these factors and how to identify assumptions and biases may also be helpful for improved accuracy.

**Implications for further research.** Further research that addresses labels in the ED is needed. Although this study did reveal insights into current labels used, there is still a great deal to discover. Based on my literature search, there does not appear to be any published research that discusses labels in triage and how these are used in relation to the triage process, decision-making, or acuity assignment. Looking at how the triage nurse uses labels in conjunction with the ESI algorithm would be extremely useful in identifying where the potential breakdown of the system occurs.

Recommendations include adding an observational piece to nurses who are triaging. Compare triage decisions and patient outcomes to determine the accuracy. It would also be interesting to include data from “novice” triage nurses, who have been in triage less than a year, and assess their knowledge of labels and if they follow the objective ESI algorithm. Comparing and contrasting a “novice” triage nurse to an “experienced” triage nurse may shed light on the different decision-making tools used by nurses. This may give insight into the subjective factors that are used by experienced nurses that are not utilized by less experienced nurses. In light of the current opioid epidemic in the United States, it is imperative that triage nurses recognize that they maybe under-triaging patients who may have significant pain. A future study that teases out drug-seeking behavior from actual emergencies would be valuable and address current subjectivity in the ESI algorithm. The findings of this research provide the

evidence needed to support larger future studies on the influence of factors on nurses' decision-making while utilizing the ESI.

**Limitations.** Several limitations of this study are worth noting. This was a qualitative study limited by the subjective perspective of those interviewed. There was a small sample size ( $n = 9$ ). Although qualitative research utilizes smaller samples when compared to quantitative research, smaller samples limit the ability to generalize the findings to a larger population. Recruitment strategies are a limitation, given that all respondents were identified via the ENA respondent list. This lends itself to excluding a large number of triage nurses who are not ENA respondents. Following the first interview, interview techniques were discussed with an experienced researcher and techniques were improved. Suggestions were implemented with subsequent interviews.

**Strengths.** While this study did have multiple limitations, it also was a novel study that used an innovative approach and data collection strategy. Having access to a sample population that was located throughout the United States was unique to prior research. The opportunity to collect from both rural and urban populations in the same regions allowed for rich data. Analyzing what factors triage nurses utilize in order to make decisions from a broad population, provides a foundation for future studies.

**Conclusion.** Triage nurses have one of the most integral jobs in the ED. The way in which triage nurses perceive the situation at the presenting time will impact many aspects of patient care and flow. The perception of triage is based on past lived experiences. However, these findings have added to this body of evidence: now, we know that labels influence on patient's acuity designation and nurse's decision-making. We know that nurses will use labels to under-triage and there is a general understanding

about certain labels in the ED. We also know that labels can mean acuity or identify a sick patient quickly. As stated, only a few published studies have associated factors with clinical decision-making in the triage process, this study was able to identify additional factors that have not been previously described. The significance of this research is for the more than 140 million patients who will visit the ED this year in the United States (National Hospital Ambulatory Medical Care Survey, 2014), and the small number of triage nurses whose practice it is to care for these populations. It is imperative to focus specifically on factors that compromise the triage process as they may have far-reaching adverse consequences for patient care and service delivery in the ED.

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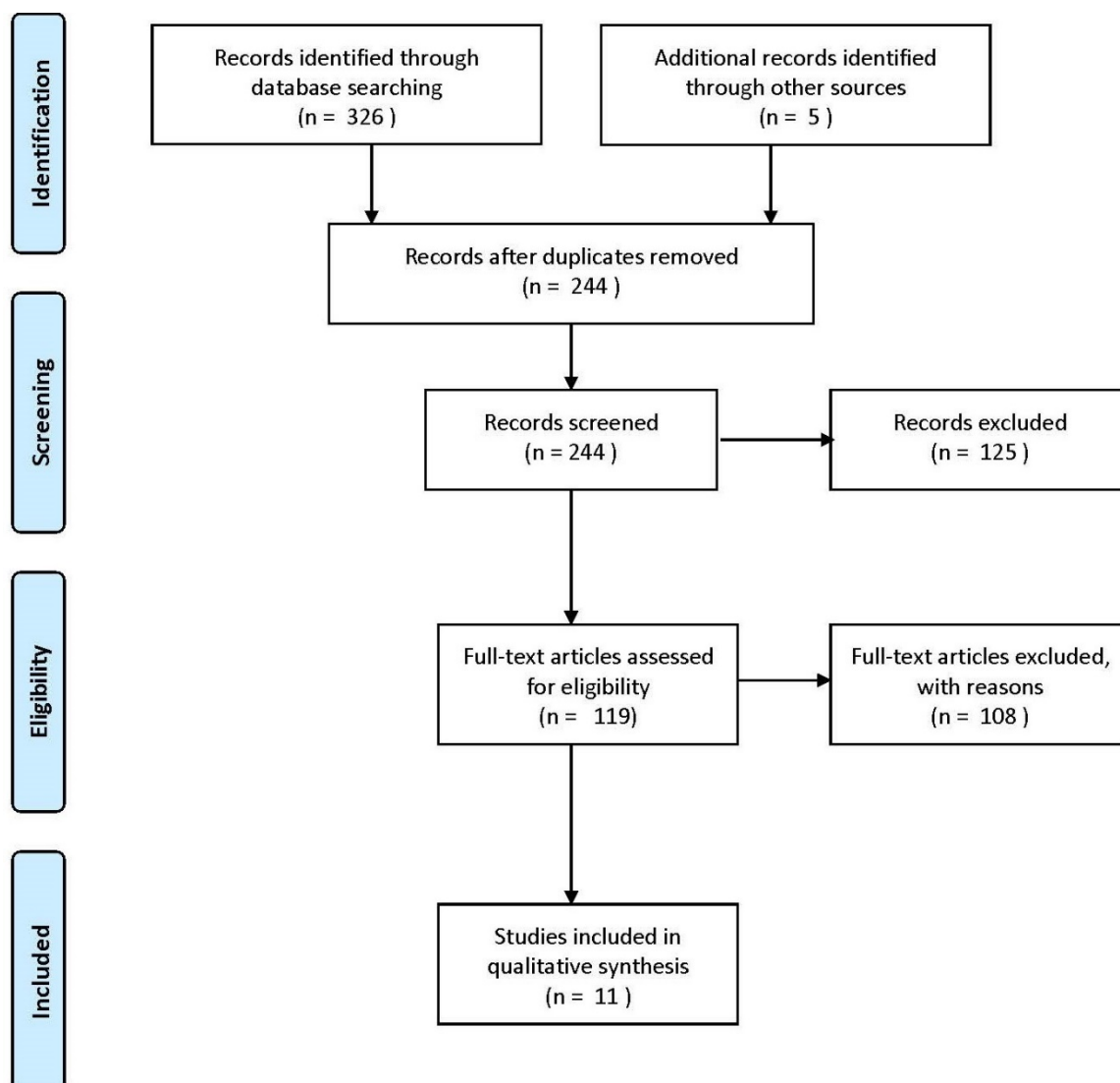
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## APPENDIX A: PRISMA



## APPENDIX B: LITERATURE MATRIX

| <b>Study</b>                                       | <b>Purpose</b>                                                                                                                                                                                     | <b>Design/<br/>Sample</b>                                                                                   | <b>Factors/<br/>Variables</b>                                                                                                                                                                                                                                                                                                                     | <b>Findings/<br/>Results</b>                                                                                                                                                                                                                                        | <b>Topic<br/>Category</b>                                                               |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Andersson,<br>Omberg,<br>and<br>Svedlund<br>(2006) | Describe how<br>nurses implement<br>triage when patients<br>arrive at EDs                                                                                                                          | Ethnographic<br>exploration<br>using a<br>qualitative<br>content analysis<br><br>19 triage nurses           | Skills (experience,<br>knowledge, and intuition),<br><br>personal capacity<br>(courage, uncertainty,<br>confidence, and<br>rationality),<br><br>work environment (high<br>work load and practical<br>arrangement),<br><br>assessment (general<br>condition, time,<br>risk/threat, pain, test<br>results, physical exam, and<br>comprehensiveness) | The factors identified<br>are skills, personal<br>capacity, work<br>environment, and<br>assessment.                                                                                                                                                                 | Environment,<br>education, and<br>intuition                                             |
| Arslanian-<br>Engoren<br>(2009)                    | Explicate the<br>decision-making<br>processes of ED<br>nurses who triage<br>men and women for<br>complaints<br>suggestive of MI<br>and to begin the<br>process of<br>developing a<br>quantifiable, | Qualitative and<br>descriptive<br>study that used<br>the focus group<br>methodology<br><br>12 triage nurses | Patient cues, heuristic<br>processes, analytic<br>processes,<br>inferences/judgments,<br>actions, and goals                                                                                                                                                                                                                                       | Triage decisions and<br>determining triage<br>urgency status, triage<br>nurses rely on past<br>medical histories,<br>patient demographics,<br>clinical presentations,<br>general appearances,<br>transportation modes,<br>vital signs, and the<br>presence of chest | Education.<br>experience,<br>beliefs,<br>information<br>obtained, and<br>race/ethnicity |

|                      |                                                                                                          |                                                                                       |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                          |                                  |
|----------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
|                      | conceptually based measure of ED nurses' cardiac-related triage decisions                                |                                                                                       |                                                                                                                                                                                                                                                                   | pains. Nurses claimed to rely on their own attitudes, perceptions, and beliefs, as well as on their nursing knowledge and ED experience.                                                                                 |                                  |
| Castner (2011)       | The purpose of this study was to answer the following questions: What data are triage nurses collecting? | Quantitative and descriptive cross-section survey<br><br>1,600 ENA U.S. triage nurses | Nurses believed it was most important to collect vital signs, allergy information, pain score, and medical history and that it was least important to collect information about existing vascular access, last oral intake, height, and skin and wound screening. | Triage nurses collect and record a great deal of data in triage that are not always related to assignment of triage acuity.                                                                                              | Information obtained             |
| Chen et al. (2010)   | Gain an understanding of the accuracy of acuity assessments made by ED triage nurses                     | Quantitative and cross-sectional questionnaire survey<br><br>279 triage nurses        | Factors included years of ED experience, hours of triage education, level of hospital and triage mode of delivery. These factors were identified as significantly affecting the accuracy of nurses' judgement                                                     | Triage accuracy was correlated to levels of education, ages, years as a registered nurse, years as an emergency nurse, years as a triage nurse, types of professional certifications, and levels in the clinical ladder. | Education, experience            |
| Garbez et al. (2011) | Identify factors used by triage nurses in their assigning patients to triage                             | Quantitative, prospective, and correlational                                          | Triage acuity                                                                                                                                                                                                                                                     | Chief complaint was the most frequently cited factor ( $N = 224$ , 67.1%) in determining                                                                                                                                 | Information obtained, Experience |

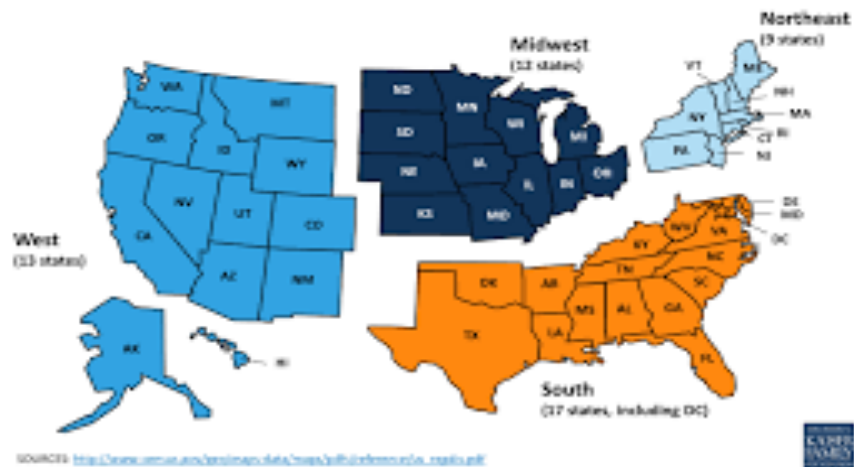
|                                     |                                                                                                                                                                      |                                                                                                                                                                                                                                |                                                                                           |                                                                                                                                                                                                                                                                         |                                        |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
|                                     | Level 2 or Level 3 in the 5-level ESI triage system                                                                                                                  | convenience sampling to accrue 18 triage nurses from two EDs. The nurses completed a questionnaire after each triage encounter ( $N = 334$ )                                                                                   |                                                                                           | Level 2 or Level 3, followed by vital signs ( $N = 136, 40.7\%$ ), medical history ( $N = 120, 35.9\%$ ), and “other factors” ( $N = 110, 32.9\%$ ).                                                                                                                    |                                        |
| Hitchcock et al. (2014)             | The aim of this study was to explore and describe the triage process in the ED to identify potential problems and vulnerabilities that may affect the triage process | Qualitative fieldwork study<br><br>unstructured observer-only observation, field notes, informal and formal interviews<br><br>60 episodes of triage were observed; 31 were informal interviews, and 14 were formal interviews. | Explore and describe the triage process                                                   | Three themes were identified in the analysis: negotiating patient flow and care delivery through the ED, interdisciplinary team communicating and collaborating to provide appropriate and safe care to patients, and varying levels of competence of the triage nurse. | Education, experience, environment     |
| Roscoe, Eisenberg, and Forde (2016) | This study examined the triage process to understand the role                                                                                                        | Qualitative ethnographic observation                                                                                                                                                                                           | What decision rules and information sources are the most pertinent to the triage process? | Triage nurses’ reliance on their “gut feeling” utilize intuition and past experience. ED                                                                                                                                                                                | Experience, environment, and intuition |

|                           |                                                                     |                                                                                                                                                             |                                                                                                                                                                                                                                     |                                                                                                                                                                                                                     |                          |
|---------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
|                           | of the patients' stories as an information source                   | 16 triage nurses                                                                                                                                            | What is the role of a patient's story in guiding the triage decisions?                                                                                                                                                              | overcrowding affect triage acuity; role of patient's clinical story.                                                                                                                                                |                          |
| Sanders and Minick (2014) | Explore perspectives and experience of triage in the United States. | Qualitative descriptive study<br><br>Southern Georgia ED<br><br>45 triage nurses were interviewed with semi - structured questions and a demographic survey | Knowledge and common meanings embedded in discourse about nursing practice                                                                                                                                                          | Triage emergency nurses require experience as well as knowledge to make good decisions. Two themes: The need for nurses to connect with patients and the ability of nurses to 'read between the lines' (intuition). | Experience and intuition |
| Schrader and Lewis (2013) | Determine whether racial disparities exist in the triage process    | Quantitative and retrospective-matched cohort-design analysis<br><br>87,685 patient visits<br>Level 1 urban U.S. trauma center                              | Triage acuity score might be influenced by race, after adjusting for ages, genders, chief complaints, insurance statuses, days and times of the presentations, presence of comorbidities or abnormal vital signs, and dispositions. | Racial bias may influence the triage process.                                                                                                                                                                       | Race and ethnicity       |
| Vigil et al. (2016)       | Retrospectively examined factors to measure                         | Quantitative retrospective study                                                                                                                            | ESI scores and wait times                                                                                                                                                                                                           | Systematic differences in how                                                                                                                                                                                       | Race or ethnicity        |

|             |                                                                                                                  |                                                                                                                                                                                                                       |                                                                            |                                                                                                                  |                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
|             | whether patient-presented vital signs and nurse-assigned ESI scores differed according to patients' ethnicities. | 350,000 patient-provider encounters<br><br>VA                                                                                                                                                                         |                                                                            | patients' vital signs are applied for determining ESI scores for different ethnic groups.                        |                                                  |
| Wolf (2010) | Explore nurses' understanding of patient acuity levels at the initial patient encounters in the ED triage        | Ethnographic exploration that used a qualitative content analysis<br><br>12 emergency nurses, with 120 patient encounters.<br>The study took place in two community hospital EDs located in the eastern United States | Triage acuity, beliefs, behaviors, assumptions, and expressions of meaning | Acuity was found to be a function of patient presentations, complaints, durations of symptoms, and body habitus. | Experience, environment, beliefs and perceptions |

## APPENDIX C: U.S. CENSUS REGIONS

## Census Regions and Divisions of the United States



[Http://www.census.gov/geos/maps-data/maps/pdf/reference/usregdiv.pdf](http://www.census.gov/geos/maps-data/maps/pdf/reference/usregdiv.pdf)

## APPENDIX D: INFORMATION FOR CONSENT

Dear Respondent:

You are invited to participate in a research study. I am asking you to complete an interview because you are a triage nurse. The purpose of the interview is to gain insight into factors that may influence clinical decision-making. The Interview will ask questions about how you conduct triage and how you make decisions in triage. The interview may also ask about how you perceive how others make acuity decisions in triage. It is my hope that information from this study will contribute to a better understanding of the factors that influence decision-making in triage.

Your responses to the interview will be digitally recorded. You will be asked for an alias, however if you prefer you may be assigned an acronym to maintain your anonymity. Your name will not appear anywhere in the data or reporting. Every effort is made to ensure your confidentiality.

Participation is voluntary, and you may withdraw or stop the interview at any time. There is no reward for participating or consequence for not participating.

For further information regarding this research, please contact Casey Cole, who is the primary investigator, at [Colecase@ISU.edu](mailto:Colecase@ISU.edu) or by phone at (951)229-2431.

If you have any questions about your rights as a research Respondent, you may contact the Idaho State University Institutional Review Board at (208) 282-2618.

Thank you in advance for your cooperation and support.

Please indicate your agreement to participate by verbally responding.

\*A copy of this is available upon request

\*ENA does not sponsor or endorse this study.

## APPENDIX E: INTERVIEW GUIDE

Thank you for agreeing to be interviewed today. Just as a reminder, you may stop at any time, and you do not have to answer a question if you do not want to. All information will be kept confidential. Do you agree to proceed with the interview?

Social talk is followed by the following:

1. In general, what types of people do you see in triage?
2. What Label's do nurses use in triage?
  - a. Can you tell me a little bit more about (label)?
  - b. What other types of people or groups of people do you see in triage (provide an example from a previous interview) Tell me about them more.
3. Tell me about the cues you use when assigning triage levels? What cues do others use?
  - a. Tell me about a situation when the triage level assigned to a patient was incorrect, over or under – triaged?
    - i. What was the patient like? Why do you think the error occurred?
4. Let's go back to those you call/describe as (label), how do you use that information when making a triage decision?
  - a. What is it like to care for a patient who is (label)?
  - b. Do you think the other nurses in ED treat these patients (label) differently? Do you? Why/why not?
  - c. Is this different than the other patients you describe?
5. Do you think the ESI is subjective?
6. Has anyone ever changed your ESI acuity level? If so why?

I would like to summarize a bit of what you said to be sure I am capturing your meanings. (summarize). Did I interpret the information correctly? (if “no”, have respondent clarify). Thank you so much for your time. Is there anything else you would like to tell me?

## APPENDIX F: INTERVIEW PROTOCOL

I appreciate you for agreeing to interview with me today. My name is Casey Cole, and I am a PhD student at Idaho State University. This interview is part of the data collection for my dissertation. The purpose of this interview is to gain insight into factors that may influence clinical decision-making in triage. My hope is to gain triage nurses' perspectives on factors related to acuity designation.

As a reminder, the interview is being digitally recorded. The recordings will be destroyed or deleted upon my graduation from my nursing PhD program at Idaho State University or December 1, 2020, whichever comes first. Your responses to the interview will be digitally recorded. You will be assigned an acronym to maintain your anonymity. Your name will not appear anywhere in the data or reporting. Every effort is made to ensure your confidentiality. This interview will last for approximately 60–90 minutes. If I need additional clarification about something you say after we have completed the interview, I may contact you requesting one more session.

### **Introduction**

You are invited to participate in a research study. I am asking you to complete an interview because you are a triage nurse. The purpose of the interview is to gain insight into factors that may influence clinical decision-making. The Interview will ask questions about how you conduct triage and how you make decisions in triage. The interview may also ask about how you perceive how others make acuity decisions in triage. It is my hope that information from this study will contribute to a better understanding of the factors that influence decision-making in triage.

Participation is voluntary, and you may withdraw or stop the interview at any time. There is a \$25.00 Amazon gift card that will be offered as a thank you upon completion of the interview.

This research project concentrates on the development of triage, with specific focus on understanding how nurses assign acuity in triage. The study is not about evaluating your skills or experiences but about gaining insight into the processes of triage.

Your contact information was obtained from the Emergency Nurses Association database, the ENA does not sponsor or endorse this study.

### **Biographical information**

1. What is your present position?
2. Where do you work (Urban or rural), and Level of hospital (1, 2, 3)?
3. What is your highest degree?
4. How long have you been a nurse?
5. What is your gender?
6. How old are you?

## APPENDIX G: FINAL THEMATIC FRAMEWORK

