Introduction

Introduction

Emergency department (ED) is an integral unit of the hospital, it is designed to provide immediate care twenty four hours every day to patients who are suffering from acute injuries and illnesses as well as patients with life threatening conditions. Worldwide, the number of patients arriving at EDs has increased over the past few years. This raised a concern of the need for a system that assessed and classified patients in the order of urgency. This classification process is termed triage and it is usually performed by an emergency triage nurse. Triage is the process of rapidly sorting and prioritizing emergency department patients according to their need for medical care, irrespective of their order of arrival or other factors including sex, age, socioeconomic status ***(Mcbrien, 2009; Fathoni et al., 2010; Qureshi, 2010; Safari, 2012; Hammond, and Zimmermann, 2013)***.

Triage is one of the most important managerial and decision making concepts in emergency, it brings the most benefit to the greatest number of patients. Triage is important for redistributing and reducing waiting times and admission rates, enhancing patient and family satisfaction and improving the quality of health care.***(Qureshi, 2010; El-Zalabany et al., 2011; Aghababaiiyan et al.,2012)***. Moreover, triage is important to facilitate the initiation of further assessment and treatment, documentation of patients and their needs and communication with them and their families regarding the nature of their problem and education regarding illness prevention and control ***(Brown et al., 2001; Jelinek et al., 2009; Cheung et al, 2012)***.

An effective triage system classifies patients into groups according to acuity of illness or injury and aims to ensure that the patients with life threatening illness or injury receive immediate intervention and greatest resource allocation. There are various types of triage scales have been developed to classify emergency patients consistently and to achieve acceptable health outcomes. Triage scales usually have 3 to 5 categories. The most commonly used scale is the Australian Triage Scale (ATS), it derived from the National Triage Scale for Australasian Emergency Departments, which has 5 categories with their corresponding level of treatment acuity. The five levels are: level one- immediate life threatening, level two- Imminently life threatening, level

three-urgent, level four- semi urgent and level 5-non urgent **(*Brown et al., 2001; Qureshi, 2010; Ulrich and Krozek, 2010)***.

The other international triage scales in common use are the Canadian Emergency Department Triage and Acuity Scale (CTAS), This scale is very similar to the ATS in terms of time to treatment objectives, with the exception of category 2, which is <15 minutes rather <10 minutes as in the ATS. Also, The Manchester Triage Scale (MTS) differs from both the ATS and the CTAS in that it is an algorithm based approach to decision making. Finally the Emergency Severity Index (ESI) used in the United States of America and based on both treatment acuity and resource consumption. The current trend now is towards the use of five level systems based upon the growing evidence that five level triage acuity data are more reliable and valid than three level triage system **(Eitel etal., 2003*; Gerdtz and Palmer, 2009; Qureshi, 2010; El-Sayed et al., 2012)***.

Triage is the most challenging responsibility of the emergency nurse. The Emergency Nurses' Association (ENA) in America has recommended that all triage nurses undertake educational preparation prior to undertaking the triage role. In the same line*, **(Fathoni et al., 2010)*** stated that continuing education and training related to the triage process should be provided for emergency nurses to conduct triage tasks more effectively and better patient outcomes due to reduced triage errors in ED. Furthermore, ***(Forsman et al., 2009)*** suggested that the regular training of triage could improve knowledge and skill of emergency nurses. Additionally, ENA recommended that triage nurses be current in Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) ***(Plaines et al., 2007; Hammond, and Zimmermann, 2013)***.

Therefore, it is important for all emergency nurses to have the basic and current comprehensive knowledge and skills which is centered around the decision making ability to prioritize the most severe patients within a limited space of time **(*Andersson et al., 2006; Keane and Chapman, 2008; Fathoni et al., 2010; Rankin et al, 2013)***. Furthermore, the triage nurse must be highly skilled in interpersonal and communication skills. Experienced triage nurse can take one look at patient based on general appearance and decide whether immediate care is required**.** Also the responsibility of the triage nurse to ensure a safe environment for patients and families in the waiting area ***(Hoyt and Thomas, 2007; Hammond, and Zimmermann, 2013)***.

Triage is the first pathway to competency therefore triage needs to be applied in all EDs. In depth continuing education has been associated with maintaining clinical competency for newly graduated nurses (NGNs). They have limited experience when they enter the work force and fearful of making mistakes and feel incompetent to deal with emergency patients ***(Mckenna and Jennifer,2008 ; Patterson et al., 2010)***. Competency refers to ongoing ability of a nurse to integrate and apply the knowledge, skills, judgement and personal attributes required to practice safely and ethically. Assessing the competence of NGNs is essential in order to identify areas for professional development and educational needs and develop nurses knowledge and skills over time through education and experience. Many methods of assessing competency, include knowledge tests, lab simulations and clinical bedside observation and records of performance ***(Salem, 2006; Bolin et al., 2011; Innes et al., 2011; Kamel and Fakhry, 2011; Wilkinson, 2013)***.

Although triage was used in many EDs there was no available evidence demonstrating its benefits and no standardization of the triage process ***(Ganley and Gloster, 2011)***. Many studies found that there is a serious concern in terms of nurses' knowledge on triage. In this regard, ***(Mirhaghi and Roudbari, 2010; Wahhabi, 2010),*** reported that poor level of knowledge and performance on triage among emergency triage nurses which emphasizes the need for more triage training to be provided for the emergency triage nurses. Further research recommend to test the effectiveness of educational programs and training courses on triage knowledge and skill for emergency nurses **(*Fathoni et al., 2010; Abdul-Hamid, 2011; Carrion, 2011)***. So, the present study has been carried out to determine the effect of implementing triage training competencies on NGNs working in ED at emergency hospital.

Review of literature

Review of Literature

Emergency department (ED) is a very natal area because large numbers of people seek emergency help for life threatening problems. The ED is expected to receive, stabilize and provide care for any patient, at any time and under any reasonable circumstance ***(Carter, 2007; Meng, 2007; Ahmed, 2011)***. It plays an important role within the health system, as it provide treatment of injured and life threatening conditions, such as cardiac arrest, airway obstruction, and shock ***(Fathoni et al., 2010)***. Moreover, it provides a significant amount of unscheduled primary and urgent care often because there is inadequate capacity for this care in other parts of the health care system. The ED is the only segment of the health care system that is mandated to screen and treat all patients who present to the EDs for care ***(McGee and Kaplan, 2007; Aacharya et al., 2010, Ahmed, 2011)***.

Triage is one of the most important and challenging aspects of emergency care. The core of "triage" is related to its French translation, namely, "to sort" ("trier"). A recent definition noted by ***(Fultz and Stuit,2005; Wesley and Bizjak, 2012; Rominski et al., 2014)*****,** Triage is the process of sorting patients based on the level of acuity to ensure the most severely injured and ill patients receive timely care before their condition worsens.

Triage is the first step performed by nurses when a patient arrives at an ED. First goal of triage is rapid identification of patients with urgent life threatening conditions and ensure that the patients receive the level and quality of care appropriate to their clinical needs ***(Patel et al., 2008; Johansen and Forberg, 2011)***. Second goal include prioritizing care need for all patients, regulating patients flow through ED, and determining the most appropriate area for treatment and provide ongoing assessment of patients and documentation of findings. Also, triage is important to put the right patient in the right place at the right time for the right reason ***(El-Gamal, 2007; Patel et al., 2008; Safari, 2012)***.

Additionally, triage is an effective way of shortening the waiting time and the length of stay in the ED and promote the safety of patients by ensuring that timing of care and resource allocation is requisite to the degree of illness or injury. An effective triage system aims to ensure that patients seeking emergency care in a suitable location

with requisite degree of urgency and that emergency care is initiated in response to clinical need rather than order of arrival ***(Brown et al., 2001; Jenkins et al., 2008; Qureshi, 2010; Kantonen et al., 2012)***.

Historical Background of Triage

Triage systems were first used to prioritize medical care during the Napoleonic wars of the late 18th century. It was first described by Dominique Jean Larrey who introduced a system of sorting the casualties who presented to the field dressing stations. Larrey realized that the order of treating the injured according to class, upper class treated first, followed by the lower classes and prisoners last was not conducive to survival rates. He then introduced the first form of triage, namely, treating the most seriously wounded first, without considering rank or class. Larrey also realized that operating on the injured within the first hour of trauma increased the victim's chances of survival and possibly the birth of the "golden hour" concept. Those with minor injuries were forced to wait and the more seriously injured persons assisted first, whilst the fatally wounded persons were laid aside and given alcohol to ease their last moments ***(Augustyn, 2006; Iserson and Moskop, 2007; Taboulet et al., 2009; Ganley and Gloster, 2011).***

During the time of Napoleon, the French military used triage to serve as a battlefield clearing hospital for wounded soldiers. The U.S. military's first use of triage was during the Civil War. Triage on the battlefield was a distribution center from which injured soldiers were sorted or distributed to various hospitals. For the military during World Wars I and II, triage was the procedure that determined which injured soldiers were able to be returned to the battlefield. Military triage continued to evolve during the Korean and Vietnam wars with the tenet of doing the "greatest good for the greatest number of wounded and injured. Other situations in which the triage process has been employed, in addition to the battlefield, are during disasters, following mass casualty incidents (MCI), and in ED ***(Nestor, 2003; Augustyn, 2006; Ehlers et al., 2007; Iserson and Moskop, 2007)***.

Classification of Triage Systems

Emergency department around the world use different triage systems to assess the severity of incoming patients' conditions and assign treatment priorities. These systems differ along a number of dimensions, including who is conducting the triage, depth of the assessment, and the amount of information obtained from the patient. Introducing a formalized triage system easier to distribute patients to the relevant areas of the ED and give a better overview and more overall control of emergency patients ***(Johansen and Forberg, 2011; Engebretsen et al., 2013).***

The most advanced system is comprehensive triage system, it include a two, three, four, or five level system. ***Five level system*** It has five urgency categories:1 (Red), immediate assessment within 0 minutes, 2 (Yellow), very urgent assessment within 10 minutes, 3 (Green), urgent assessment within 30 minutes, 4 (Blue), semi urgent assessment within 60 minutes and 5 (White), non- urgent assessment within 120 minutes. Five level system composed of the Australasian Triage Scale (ATS), the Canadian Triage and Acuity Scale (CTAS), the Manchester Triage System (MTS), and the Emergency Severity Index (ESI). ***Four level system*****,** It has four urgency categories: 1 (Red), immediate assessment, 2 (Yellow), assessment within 20 minutes, 3 (Green), assessment within 60 minutes and 4 (White), assessment within 120 minutes. ***Three level system*** is known as "emergent, urgent and non-urgent" Where ***Two level system*** concerns with a serious or life threatening patients. Additional types of triage, disaster triage, mass casualty triage, military and civilian triage, incident triage, ICU triage and telephone triage ***(Augustyn, 2006; Christ et al., 2010; Parenti et al., 2013; Veenema, 2013)***.

1. **Comprehensive Triage Systems**

Comprehensive triage systems is the most advanced system and is the process currently recommended by the Emergency Nurses' Association (ENA) Standards of Emergency Nursing Practice. Comprehensive triage systems have policies, procedures, and standards in place to serve as guidelines. The assessment process involves collecting the chief complaint and any other relevant subjective or objective information. The goal of the comprehensive triage assessment is to gather sufficient information to support a triage severity rating decision. Ratings will vary depending on

whether the institution is using a two, three, four, or five level system. The triage nurse documents initial findings in the medical record and reassesses patients according to individual needs and departmental policy. The ENA recommends that the triage encounter take no more than 5 minutes and possibly as few as 2 minutes ***(Jelinek et al., 2009; Hammond, and Zimmermann, 2013; Veenema, 2013)***.

A. Five Level Triage System

Five level triage system are the gold standard in emergency medicine worldwide. It designed to identify the most urgent cases to ensure that they receive priority treatment, followed by the less urgent. The international triage scales in common use are the Australasian Triage Scale (ATS), the Canadian Triage and Acuity Scale (CTAS), the Manchester Triage System (MTS), and the Emergency Severity Index (ESI). Internationally, five level triage system have been shown to be a valid and reliable method for categorizing people who are seeking assessment and treatment in hospital ED when compared with either three or four level triage systems **(*Christ et al., 2010; Janssen et al., 2011; Kantonen et al., 2012; Engebretsen et al., 2013*)**.

In five level triage system, which has 5 categories with their corresponding level of treatment. ***Category 1 Resustation*** (immediate life threatening patient needs to be seen immediately by a physician). For example cardiac arrest, respiratory arrest, respiratory rate < 10/ min, GCS< 9, uncontrolled hemorrhage and chest or abdominal injury. ***Category 2 Emergent*** (Imminently life-threatening patient needs to be seen immediately by a physician within 15 minutes). The emergent category is utilized for severe stridor, moderate respiratory distress, circulatory compromise, severe blood loss, severe trauma with high risk mechanism, penetrating injury, sever trauma with normal vital signs, very severe pain, head injury with GCS 9-12, foreign body aspiration with breathing difficulty, severe headache with high blood pressure, disorientation, altered loss of consciousness and sudden onset **(*Engebretsen et al., 2013*)**.

In addition, ***Category 3 Urgent*** conditions that could potentially progress to a serious problem requiring emergency intervention within 30 minutes e.g. asthma with mild respiratory distress and O2 saturation 90-95%, severe hypertension, moderate shortness of breath, trauma patient with GCS 13-14 head injury with short loss of consciousness, moderate pain, dehydration, upper respiratory tract infection in elderly

patients or O2 < 95% with evidence of sever bacterial infection and agitated potentially aggressive patient ***(El-Zalabany et al., 2011;Veenema, 2013)***.

Moreover, ***Category 4 Less Urgent*** patient's condition may deteriorate if assessment and treatment is not commenced within one hour of arrival in ED e.g. mild haemorrhage, mild head injury, GCS 15 and no history of loss of consciousness , nausea or vomiting minor trauma, foreign body aspiration with no respiratory distress, difficulty swallowing, no respiratory distress, mild pain, dehydration, eye inflammation, constipation and diabetic hyperglycemia. Lastly, ***Category 5 Non Urgent*** conditions that may be acute but non urgent as well as patient symptoms or clinical outcome will not be significantly affected if assessment and treatment are delayed up to two hours from arrival e.g. minimal pain, sore throat, minor wounds and mild abdominal pain ***(Jelinek et al., 2009; Johansen and Forberg, 2011; Atzema, 2012; Veenema, 2013).***

Australian Triage Scale (ATS) is a 5-level system used to classify patients in all Australian emergency department since 1994. It is the most commonly used scale, which has 5 categories with their corresponding level of treatment acuity. The ATS is derived from the National Triage Scale for Australasian emergency departments (NTS). Based on research and expert consensus, each category lists clinical descriptors or conditions that correspond to a specific severity level, ***see figure (1) (Lahdet et al., 2009; Christ et al., 2010)***. Objective time frames for physician evaluation are set for each classification. This time to treatment is the maximum interval a patient should expect to wait for further assessment and medical intervention. The clock starts when a patient first presents to the emergency department. The triage nurse selects ATS category based on his or her response to the statement. Research has shown the ATS to be valid and reliable methods for categorizing patients by nursing staff in the emergency department ***(Gerdtz and Palmer, 2009; Lahdet et al., 2009; Christ et al., 2010; Hammond, and Zimmermann, 2013)***.

Level	Category	Description	Treatment	Color	Examples
Category 1	**Resuscitation**	**Immediately life-threatening**	**Immediate**	**Red**	• Obstructed or, partially obstruced. • Cardiac arrest • Severe respiratory distress • Respiratory rate < 10/ min. • Pre arrest state: with unstable vital signs and signs of hypo perfusion. • Shock: with sever haemdynamic compromise • Major trauma: sever injury to one or more body system. • GCS< 9
Category 2	**Emergency**	**Imminently life-threatening**	**10 minutes**	**Orange**	• Airway risk, severe stridor. • Moderate respiratory distress. • Moderate haemodynamic compromise. • GCS 9 – 12 • Patient report sever pain (7-10) • Severe neurovascular compromise e.g. pulseless, nil sensation , nil movement , decreased capillary refill
Category 3	**Urgent**	**Potentially life-threatening**	**30 minutes**	**Green**	• Airway patent • Mild respiratory distress. • Mild haemodynamic compromise. • Normal GCS • moderate Pain (4- 6) • Moderate neurovascular compromise e.g. pulse present decreased sensation, movement
Category 4	**Semi urgent**	**Potentially life-serious**	**1 hour**	**Blue**	• Airway patent • No respiratory distress. • No haemodynamic compromise. • GCS ≥ 13 • Mild Pain (1-3) • Mild neurovascular compromise e.g. decreased / normal sensation, movement
Category 5	**Non urgent**	**Less urgent**	**2 hour**	**White**	• Airway patent • No respiratory distress. • No haemodynamic compromise. • GCS ≥ 13 • Mild Pain (1-3) • No neurovascular compromise

Figure (1): The Australasian Triage Scale
Quated after Hammond, and Zimmermann, (2013)

Canadian Triage and Acuity Scale (CTAS) is a 5-level system used by triage nurses to classify patients, it was officially included in policy throughout Canada in 1997. It continues to be revised and updated on a continuing basis and has been endorsed by the Canadian Association of Emergency Physicians and the National Emergency Nurses Affiliation of Canada and this scale is very similar to the ATS in terms of time to treatment objectives, with the exception of category 2, which is <15 minutes rather <10 minutes as in the ATS ***(Bullard et al., 2008; Warren et al., 2008; Gerdtz and Palmer, 2009; Rankin et al., 2013).***

Canadian triage and acuity scale attempts to more accurately define patients needs for timely care and allow ED to evaluate their acuity level, resource needs and performance against certain operating. Also, it can be used as an instrument to determine triage quality and to predict admission rates, hospital length of stay and diagnostic utilization. Three important concepts are included in the design of this scale utility, relevance and validity. Studies have indicated that the CTAS is valid and reliable method of triage assessment and categorization of emergency patients ***(Beveridge et al., 1999; Bullard et al., 2008; Warren et al., 2008; Trip et al., 2011)***.

Level I	Resuscitation	see patient immediately
Level II	Emergency	within 15 minutes
Level III	Urgency	within 30 minutes
Level IV	Less Urgency	within 60 minutes
Level V	Non Urgency	within 120 minutes

Figure (2) Canadian Triage and Acuity Scale colour

Quated after Hammond, and Zimmermann, (2013)

The Manchester Triage System (MTS) is a 5-level system used by triage nurses to prioritize patients, it was jointly developed by the Royal College of Nursing Accident and Emergency Association and the British Association for Accident and Emergency Medicine and it used in Great Britain and in German emergency departments. The MTS differs from both the ATS and the CTAS in that it is an algorithm consisting of 52 flow charts relating to the patient's presenting condition. The MTS provides clarity about maximum allowed waiting time for the different levels of urgency: **"emergent"** (red) needs instantaneous evaluation, **"very urgent"** (orange) needs evaluation within 10 min, **"urgent"** (yellow) within 60 min, **"standard"** (green) within 120 min and

"non-urgent" (blue) can wait for up to 240 min. The validity of the MTS has been shown to be sensitive in identifying critically ill patients and for the detection of high-risk chest pain ***(Roukema et al., 2006; Gerdtz and Palmer, 2009; Grouse, et al., 2009; Ganley and Gloster, 2011)***.

Number	Name	Colour	Max time
1	Immediate resuscitation	Red	0 minutes
2	Very urgent	Orange	10 minutes
3	Urgent	Yellow	60 minutes
4	Standard	Green	120 minutes
5	Non-urgent	Blue	240 minutes

Figure (3) Manchester Triage System (MTS)

Quated after Hammond, and Zimmermann, (2013)

The Emergency Severity Index (ESI) is a five-level triage algorithm used by emergency nurse to categorizing patients and it was developed in the USA in the late 1990s. The ESI Triage Group included emergency nursing and medical clinicians, managers, educators, and researchers. The ESI was initially implemented in two university teaching hospitals in 1999, and then refined and implemented in five additional hospitals in 2000. The ESI triage algorithm yields rapid, reproducible, and clinically relevant stratification of patients into five groups, from level 1 (most urgent) to level 5 (least urgent). Clinical studies show that ESI also has good validity and reliability in specific groups of patients such as children and the elderly ***(Lahdet et al., 2009; Christ et al., 2010; Gilboy et al., 2012)***.

The Emergency Severity Index have several benefits, simple to use, reduced the subjectivity of the triage decision, and was more accurate than other triage systems. One benefit of the ESI is the rapid sorting of patients that need immediate attention. Use of the ESI for this rapid sorting can lead to improved flow of patients through the ED. Other benefits of the ESI include determination of which patients do not need to be seen in the main ED and those who could safely and more efficiently be seen in a fast track

or urgent care area. For example, level 1 and 2 patients can be taken directly to the treatment area for rapid evaluation and treatment, while lower acuity patients can safely wait to be seen Additionally, ESI facilitates communication of patient acuity more effectively than the three-level triage scales ***(Travers et al., 2009; Christ et al., 2010; Gilboy et al., 2012)***.

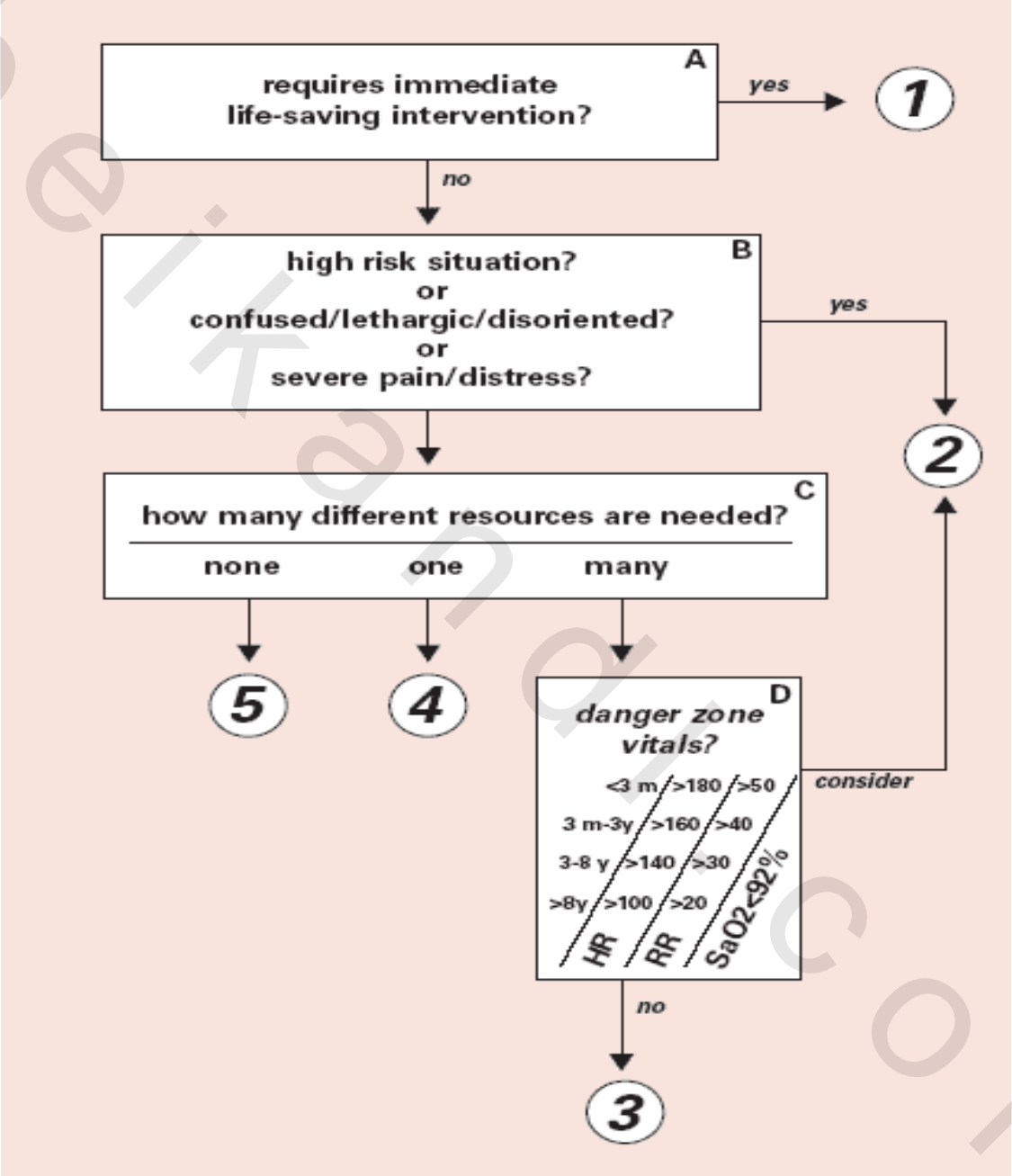

Figure (4) Triage algorithm of the Emergency Severity Index

Quated after Christ et al., (2010)

B. Four Level Triage System

In four level Triage System, the emergency category is usually subcategorized to identify those conditions that must be treated immediately ***(stat or* 1A)** versus rapidly (within a few minutes or **IB**). Stat conditions would be classified as **1A** problems and would include conditions such as cardiac arrest, airway obstruction, or hemorrhage with shock, whereas, **IB** problems would include asthma, cardiac dysrhythmia with stable blood pressure or heavy bleeding but not tacycardia ***(Parenti et al., 2013;Veenema, 2013)***.

C. Three Level Triage System

In three level Triage System, **Emergent** category signifies a condition that requires treatment immediately or within 15 to 30 minutes. Examples include cardiac arrest, airway obstruction, seizure, asthma, depressed level of consciousness. **Urgent** category is utilized for serious injury that must be attended to as soon as possible, but for whom a wait of up to 2 hours would not add to the morbidity or mortality of the patient. Examples include a complex long bone fracture, acute psychiatric problem. **Non Urgent** category, in this types of simple is any condition that can wait more than 2 hours to be seen without the likelihood of deterioration such as simple fracture, minor laceration, rash and ear or throat pain **(*Gerdtz and Palmer, 2009; Veenema, 2013*)**.

D. Two Level Triage System

In an ideal world every patient would have a triage assessment within minutes of arrival at the ED. Because of high patient volumes, many facilities have recognized, that this goal cannot be achieved and instead have adopted a two level system. With this approach the triage process is broken down into steps. First, an experienced triage nurse greets the patient within minutes of arrival and determines the chief complaint while simultaneously conducting a brief assessment: of airway, breathing, and circulatory status. This nurse decides whether the patient needs to be seen immediately or can wait safely for further assessment. With this type of system patients who require immediate care are promptly taken to treatment area and are registered at the bedside. This system quickly identifies the patient who is not safe to wait. stable patients have a patient chart initiated by the first nurse, who documents chief complaint and then directs these

patients to the assessment nurse. This second nurse completes a more detailed evaluation and may initiate laboratory work and radiographic studies according to protocols ***(Hammond, and Zimmermann, 2013; Veenema, 2013)***.

2. Disaster Triage

A natural disaster is a life threatening event with an impact on a large number of people. The Red Cross defines disasters as" exceptional events which suddenly kill or injure large numbers of people". It is, also defined as events occurring on a scale which require external assistance. Hence, disasters are characterized by a large number of victims and requests for resources which overwhelm those that are available. In this way, disasters are different from daily emergencies which involve a small number of victims and can be handled with available resources **(*Richards, 2004; Iserson and Moskop, 2007; Inampudi, 2011).***

3. Mass Casualty Triage System

Mass casualty triage known as simple triage and rapid treatment (START) has been widely used in the United States since the 1980s. It developed at Hoag Hospital in Newport Beach, designed to assist minimally trained first responders to identify the most seriously injured patients and to triage multiple victims in 30 seconds or less. START is based on the rapid assessment of patients using the following three criteria: respirations, < or > 30 per minute, perfusion, Capillary Refill > or < 2 seconds, and mental status, follow simple commands. Patients are classified into one of four categories and are tagged and with color coded: immediate (red), delayed (yellow), minor (green), and deceased (black) **(*Christian et al., 2007; Kahn et al., 2009; Lee, 2011)***.

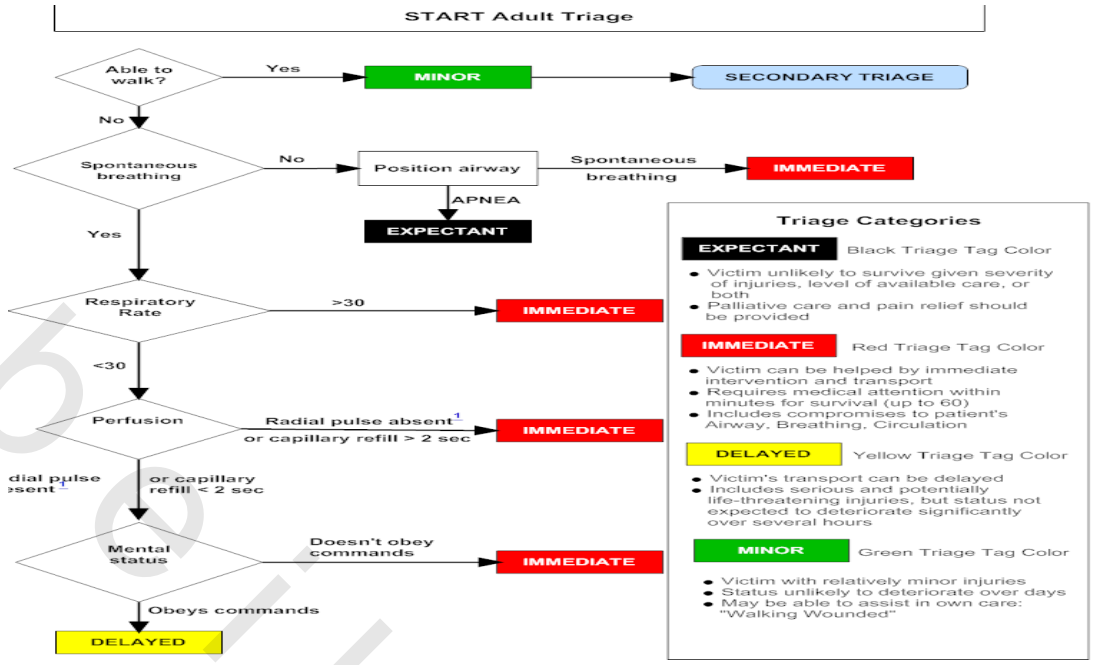

Figure (5) START algorithm
Quated after Kahn et al., (2009)

4. Military and Civilian triage,

Although both assign a priority to the order of treatment, the determinants for priority of care differ between the two. Civilian triage gives priority to the persons who have life threatening injuries even if they will take up a lot of resources, while military triage gives priority to person who can survive with the smallest amount of resources available. People who need large amount of resources are not treated under military triage. In the past, military triage focused primarily on treating soldiers with minor conditions so they could return to the battlefield. Furthermore, the civilian triage system can be further divided into two types, usual hospital daily triage and disaster situation triage ***(Iserson and Moskop, 2007; Veenema, 2013)***.

5. **Incident (Multi casualty) Triage**

This type of triage is designed to respond to an incident that, creates multiple casualties, as, for example, a multiple motor "chide crash, a major residential fire, or a commercial airliner crash. In such events, many injured patients, including some with severe injuries, place significant stress on, but typically do not overwhelm, a local emergency medical system. Emergency caregivers at the scene and in the ED triage

patients to identify the most critically injured for priority transportation and treatment. Additional physicians and other medical and support personnel may be called to help treat the large number of patients with urgent needs, and those with minor injuries and illnesses must wait longer than usual for treatment, but all can eventually receive care ***(Iserson and Moskop, 2007; Veenema, 2013)***.

6. Inpatient (ICU) Triage

When a patient requires hospitalization, additional decisions must be made about what level of hospital care the patient should receive. In the optimal situation, decisions must be made about who will receive priority access to those services. If these decisions are based on assessment of the patient's condition and are made according to some system or plan, they are triage decisions. The most common inpatient triage decisions in US hospitals involve access to intensive care. In theory, these decisions allocate ICU beds to those who can most benefit from this level of treatment. In less affluent nations with limited hospital services, inpatient triage decisions are routinely made about priority access to surgery and diagnostic imaging, as well as intensive care ***(Iserson and Moskop, 2007; Veenema, 2013)***.

7. Telephone triage

Telephone triage plays an important role in managing demand for health care. The benefits for patients include: easier access, convenience, savings on time and money, less time off work, and improved contact and, therefore, improve compliance with treatment. Telephone triage can help manage workload, reduce numbers of home visits and provide an opportunity for patient education an empowerment ***(Brown et al., 2011)***. Telephonic triage is a systematic process that screens a caller's symptoms for urgency and advises the caller when to seek medical attention based on the severity of the problem described. The nursing management of the patient requiring emergency treatment and attention begins the moment a call for help is received and continues until the patient is seen, it is a continuum that includes six phases, namely, pre-hospital care, hospital resuscitation, definitive care and operative phase, critical care, intermediate care and rehabilitation **(*Augustyn, 2006;* Blank and Coster, 2013)**.

Developing triage system in hospital

Because the volume of patient admissions to an ED cannot be precisely planned, the available resources may become overwhelmed at times, with resulting risks for patient safety. EDs around the world use different triage systems to assess the severity of incoming patients' conditions and assign treatment priorities. Five-level triage systems are valid and reliable methods for assessment of the severity of incoming patients' conditions by nursing staff in the ED. The introduction of structured triage by specially trained nursing staff in the ED helps to accurately identify patients whose lives are endangered, especially at times of insufficient treatment capacity ***(Mcbrien, 2009; Christ et al., 2010; Mitchelhill et al., 2011; Safari, 2012).***

Development of a modern triage system in hospital increase patient safety, improved both the organization of the work of the ED staff and their job satisfaction, and reduced the patients' waiting time as well as the total time they spent in the ED. Emergency triage was not developed to decrease waiting time, but to make the waiting time as safe as possible for patients when there is crowding in the ED. Triage nurse role as fundamental to the developmental pathway of an emergency triage nurse. Developing the competencies to work in the role of triage was part of the progression of the emergency triage nurse and becoming skilled at triage facilitated a clear process of clinical judgement and decision-making at the point of patient presentation to ED **(*Christ et al., 2010; Fathoni et al., 2010; Qureshi, 2010)***.

The implementation of a structured triage system in an ED is associated with a transitional phase and requires careful planning involving all parties concerned, including the nursing and medical staff. Besides the development of a training program, the consequences for patient flow, the hospital information system, and the workflow of the interprofessional team must be considered. Realistically, a modern triage system should be able to be implemented and evaluated regularly and quality improvement measures developed jointly by the members of the team **(*Christ et al., 2010; Mitchelhill et al., 2011; Morrish, 2012; Safari, 2012*)**.

Role of Nurse in Triage Process

Triage process is an important step in patient pathway in the ED and has its direct effect on patient outcome and mortality and morbidity rate, also it could be of a good value in decreasing overcrowding in ED. Traditionally, the triage process is an intuitive element of emergency nursing practice. The triage assessment should be timely and brief. The purpose of triage process is to gather sufficient information about the patient to make a triage severity rating decision. The goal should be for all patients to receive an initial triage assessment within 5 minutes of arrival in the ED ***(Jelinek et al., 2009; Hammond, and Zimmermann, 2013)***.

Working as a triage nurse can be mentally challenging and sometimes exhausting. The triage area frequently is noisy and overcrowded, telephones ring constantly, children cry, and patients, families and visitors are stressed and demanding. A nurse performing triage must have an appropriate level of knowledge and skills to perform the triage role. Nurses have a legal and professional duty to perform the role of triage nurse utilizing a systematic approach ***(Sands, 2007; Gerdtz and Palmer, 2009; Ganley and Gloster, 2011)***.

Rapid and accurate triage role requires an emergency nurse with the right qualifications, education, and experience. The essential qualifications for an effective triage nurse is emergency nursing experience and skill in rapid assessment and correct determination of patient urgency. The initiation of triage role depends on the decision made by the triage nurse and ability to recognize who is sick and who is critical success factor for the triage nurse. The triage nurse must possess strong interpersonal skills in addition to having the ability to perform focused assessments. The triage nurse must have the ability to work autonomously and make precise decisions based on the focused assessment. Also she must maintain control of the waiting room when patients insist on being seen prior to another patient. The triage nurse must be able validate the triage decisions and to field questions based on the acuity of the patients and must have ability to use the nursing process effectively. Moreover the ENA recommends that the triage nurse is competent and able to function independently in all aspects of emergency nursing prior to undertaking the triage role ***(Salem, 2006; Hoyt and Thomas, 2007; Ganley and Gloster, 2011)***.

Effective communication is essential in enhancing the effectiveness and accuracy of the triage process. Triage process begins with initial contact between the triage nurse and patient. **First**, the nurse should introduce him or herself by name and title. This information provides the patient or relatives with the confidence that the advice is given by a knowledgeable professional as well as establishing a rapport and so developing trust. The trust gained during the initial communication encourages the patient to reveal information, which allows the nurse to make informed decisions about the patient's health. Decision making is based on the information obtained during the triage process, therefore effective communication is essential to obtain accurate information and make an accurate assessment. ***(Brown et al., 2001; Bach and Grant, 2009; Gerdtz and Palmer, 2009)***.

Second, triage nurse should listen to the information provided by the patient, or other healthcare professional. This information, including demographic data, health information and current symptoms. Moreover, triage nurse plays a vital role even before the patient arrives to the emergency department. In this regard the emergency nurse role includes maintaining patient safety and security, primary assessment, secondary and focused assessment ***(Sands, 2007; Hoyt and Thomas, 2007; Ganley and Gloster, 2011)***.

1. Triage Safety and Security

Assessment of environmental hazard, is the first step to safe practice at triage. The triage nurse must ensure that the patient is well protected from infection, fire explosion, as well as from electrical, and chemical hazards arising from equipment that may be danger to the health personal, patient and relatives. In addition, the triage nurse should observe standard precautions whenever there is potential for exposure to blood or other body fluids. The triage nurse should be aware of the risks associated with leaving the triage area to retrieve patients from vehicles or reception areas of the hospital. As part of maintaining a safe environment, the triage nurse must ensure that equipment for basic life support (bag valve mask and oxygen supply) is available at triage. Likewise, equipment which complies with standard precautions is required. At the beginning of each shift, the triage nurse should conduct a basic safety and environment check of the work area to optimize environmental and patient safety. ENA

recommends that the triage environment provide safety for both the patient and the triage nurse ***(Hoyt and Thomas, 2007; Louis et al., 2008; Ahmed, 2011)***.

Triage nurse is responsible for safety of the patients and others in the waiting area. The incidence of physical assault on emergency nursing staff is increasing. There are many factors that contribute to emergency violence, including the stressful environment, overcrowding, long wait times, and mental health issues. Knowledge of what safety measures are in place in the department is essential for the triage nurse. These measures may include restricted access doors, security cameras, and visible security guards or police officers. The triage nurse should keep one eye on the waiting room constantly, checking for situations in which the behavior of patients, families, or visitors is escalating. While conducting a triage patient interview, the nurse also must be alert for signs of agitation and potential for violence. Triage nurses need to be able to identify psychiatric patients who cannot remain safely in the waiting room and need to be escorted directly to a secure room in the treatment area **(*Fultz and Stuit,2005; Brown et al., 2011; El-Zalabany et al., 2011)***.

2. Across the Room Assessment

Ideally, triage begins with an across the room assessment and then continues in the privacy of the triage booth or room. The triage assessment begins when the triage nurse first sees the patient. In most cases an experienced triage nurse can take one look at a patient and, based on general appearance, decide whether immediate care is required. If at any time the triage nurse identifies life threatening problems, the nurse initiates appropriate intervention immediately and the patient is transferred to a care area ***(Warren et al., 2008; Jelinek et al., 2009)***.

Across the room assessment includes a critical look at general appearance, airway, work of breathing, circulation and assessment of risk factor such as age > 65 years, mechanism of injury and comorbidities. It should be remembered that a patient may be at significant risk of illness or injury and can be physiologically normal at triage. The presence of multiple risk factors, particularly if directly relevant to the patient's presenting problem should be considered seriously and presence of one or more risk factors may result in allocation of triage category of higher acuity ***(Gerdtz and Palmer, 2009; Wyer et al., 2011; Safari, 2012)***.

3. Primary assessment

Primary assessment is the most crucial assessment tool in emergency patient. This rapid, 1 to 2 minute evaluation is designed to identity life threatening injuries accurately, establish priorities, and provide simultaneous therapeutic interventions. The process of setting priorities for treatment is known as triage. One of the most common methods for triage of patients uses **"ABCDE**" as a memory trigger for the sequence of assessment. ***A*** is airway with cervical spine immobilization, ***B*** is breathing and ventilation, and **C** is circulation. **D** is neurologic disability. **E** is exposed, all areas of the body should be exposed so that injuries are not missed underneath clothing ***(Gray and Gravin, 2005; Middleton, 2010; Thim et al., 2012).***

Airway patency and oxygenation is the first priority, assessment and treatment of the airway are done while maintaining cervical spine immobilization. An effective airway allows for adequate ventilation and optimal oxygenation. Every trauma patient has the potential for an ineffective airway, whether it occurs at the time of injury or develops during resuscitation. The tongue, because of posterior displacement, is the most common cause of airway obstruction. Other causes of obstruction are foreign debris (blood or vomitus) and anatomical obstructions from maxillofacial fractures. Patients with spinal cord injuries may not be able to protect their airway ***(Lambert et al, 2006; Jones et al., 2009; Dewit and Kumagai, 2013; Sole and Mosely, 2013)***.

Opening the airway is easily accomplished by the simple manual technique of a jaw thrust or chin lift. These maneuvers do not hyperextend the neck or compromise the integrity of the cervical spine. The airway must be cleared of any foreign material such as blood, vomitus, or teeth by gentle suction with a tonsillar tip catheter. Nasopharyngeal and oropharyngeal airways are the simplest artificial airway adjuncts used in patients with spontaneous respirations and adequate ventilatory effort. Both devices help to prevent posterior displacement of the tongue. The oropharyngeal airway is not used in the conscious patient because it may induce gagging, vomiting, and aspiration **(*Carlson and Almond, 2009; Pollak et al., 2011).***

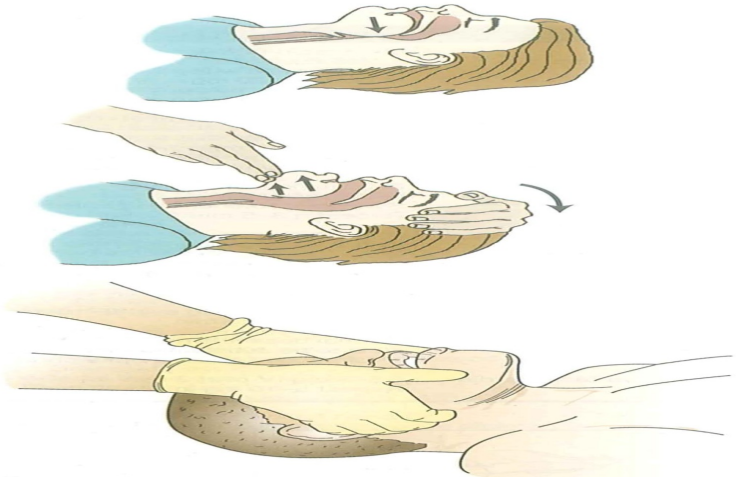

Figure (6) Chin lift maneuver and jaw thrust

Quated after Morton and Fontaine, (2013)

Endotracheal intubation is the definitive nonsurgical airway management technique and allows for complete control of the airway. Both the oral and nasal routes may be used for intubation. An alternative airway device, a laryngeal mask airway (LMA), may be used when endotracheal intubation is not feasible. Before intubation, patients are pre oxygenated with 100% oxygen via a bag-mask device. Mechanical ventilation with 100% oxygen is initiated immediately after intubation. The patient is then attached to a mechanical ventilator to provide ventilation and oxygenation ***(Carlson and Almond, 2009; Pollak et al., 2011; Vankipuram, 2012; Sole and Mosely, 2013)***.

Breathing, once the airway is secured, adequate oxygenation and ventilation must be assessed. Breathing is assessed by observing for spontaneous respirations, symmetry and depth of chest movement during respiration, respiratory rate (RR), pattern of breathing, use of accessory muscles, and auscultation of breath sounds. Skin color, thoracic bruises and wounds, chest wall tenderness, and the presence of neck vein distention or tracheal deviation also should be assessed. When spontaneous breathing is present but ineffective, a life-threatening condition must be considered if any of the following are present: altered mental status, central cyanosis, asymmetrical expansion of the chest wall, use of accessory or abdominal muscles, or both, paradoxical movement of the chest wall during inspiration and expiration, diminished or absent breath sounds, tracheal shift from midline position, decreasing oxygen saturation via pulse oximetry, or distended jugular veins. Arterial blood gas analysis and diagnostic

studies including chest x-ray and chest computed tomography (CT) imaging may be completed to assist in determining the effectiveness of specific interventions. Interventions to restore normal breathing patterns are directed toward the specific injury or underlying cause of respiratory distress, with the goal of improving ventilation and oxygenation. Basic nursing interventions include application of supplemental oxygen, effective positioning, and evaluation of specific interventions **(*Fultz and Stuit, 2005; Gray and Gravin, 2005; Ropert, 2010; Vankipuram, 2012*)**.

Impaired oxygenation follows airway obstruction as the most crucial problem of the trauma patient. Impaired gas exchange can result from ineffective ventilation, an inability to exchange gases at the alveoli, or both. Possible causes include a decrease in inspired air, retained secretions, lung collapse, atelectasis, or accumulation of blood in the thoracic cavity. Any patient presenting with multiple systemic injuries, hemorrhagic shock, chest trauma, and central nervous system trauma must be assessed for impaired gas exchange. These conditions have the potential to affect the patient's volume status and oxygen carrying capacity, interfere with the mechanics of ventilation, or interrupt the autonomic control of respirations. Assessment is ongoing, and the nurse must be prepared to assist with intubation and subsequent mechanical ventilation, chest tube insertion, and restoration of circulating blood volume **(*Thim et al., 2012; Dewit and Kumagai, 2013; Sole and Mosely, 2013*)**.

Circulation, once the airway and breathing dynamics have been addressed, the circulatory system needs to be assessed. Cardiopulmonary resuscitation is indicated for the trauma patient without a palpable carotid pulse. Hemorrhage is the most common cause of shock in the trauma patient, it may be external hemorrhage or internal. The patient should be assessed for tachycardia, hypotension, narrowed pulse pressure, poor peripheral pulses, cool and clammy skin, pallor, and any obvious signs of bleeding. An altered mental status, distended neck veins, and distant heart sounds also are signs of cardiac tamponade in the trauma patient **(*Louis et al., 2008; Carlson and Almond, 2009; Vankipuram, 2012; Sole and Mosely, 2013*)**.

Furthermore, initial interventions include applying pressure to control the bleeding, replacing circulatory volume with crystalloid and blood products, and determining definitive treatment. In the face of hypovolemic shock from hemorrhage, early, rapid surgical intervention is life saving. Uncontrolled external bleeding is

managed by application of direct pressure to the bleeding site, elevation of a bleeding extremity, and application of pressure over proximal arterial pressure points. According to Centers for Disease Control and Prevention and Occupational Safety and Health Administration requirements recommended use of personal protective equipment that includes barrier devices such as gloves when in contact with body fluids ***(Mahmoud, 2007; Carlson and Almond, 2009; Ahmed, 2011; Pollak et al., 2011)***.

The management of hypovolemic shock focuses on finding and eliminating the cause of the bleeding and concomitant support of the patient's circulatory system with IV fluids and blood products. Frequently, it is difficult to assess blood loss, especially with internal hemorrhage from blunt trauma. Sympathetic compensatory mechanisms in the body respond to states of hypoperfusion through tachycardia, tachypnea, and decreased urine output. These signs and symptoms may not be obvious until the patient is in a later stage of hypovolemic shock. As a result of hypovolemia and hypoxemia, metabolic acidosis occurs secondary to a shift from aerobic to anaerobic metabolism and the production of lactic acid. Increases in lactate level and base deficit are accompanied by a decrease in tissue perfusion and increases in morbidity and mortality **(*Louis et al., 2008; Dewit and Kumagai, 2013; Sole and Mosely, 2013).***

Disabilities, A brief neurologic assessment is performed once the airway, breathing, and circulation have been established and life-threatening injuries have been addressed. Assessment of neurological disabilities includes evaluation of the patients' responsiveness by uses AVPU scale (Alert, Verbal stimuli, Painful stimuli, Unresponsive). The AVPU scale is a rapid method of assessing level of consciousness. The patient's level of consciousness is reported as A, V, P, or U. ***Alert*** and oriented signifies orientation to person, place, time, and event. ***Verbal***: responds to verbal stimulus, this indicates that the patient only responds when verbally prompted. ***Painful***: responds to pain, it is used if patient does not respond to verbal stimuli by gently but firmly pinching his patient's skin. ***Unresponsive***: if the patient does not respond to painful stimulus on one side, try the other side. A patient who remains flaccid without moving or making a sound is unresponsive ***(Agarwal et al., 2011; Sole and Mosely, 2013)***.

Also assessing level of consciousness and using Glasgow Coma Scale (GCS) score can be helpful in providing additional information in patient with changes in

mental status. The GCS uses parameters that test a patients' eye opening, best verbal response and motor response, which provide a numeric score that defines the severity of a patients' brain dysfunction and prognosis. A score between13-15 correlates with a mild head injury, 9-12 moderate and <8 with a severe head injury. Finally assess pupillary equal size and reaction to light (PEARL). Possible neurological injuries based on the history of the injury (e.g., ejection from motor vehicle, fall, or diving accident) are also considered. A head computed tomography (CT) exam is required for any patient with a GCS score of 12 or who experiences a decrease in their GCS of more than 2 points ***(Dolan and Holt, 2008; Louis et al., 2008; Pollak et al., 2011; Thim et al., 2012)***.

Lacerations to the scalp may result in significant bleeding. These wounds are cleansed, debrided, and sutured. Assessment of the skull for fractures, it may be linear, basilar, closed depressed, open depressed, or comminuted. Underlying brain injury may occur with skull fractures. The diagnosis is based on the oozing of cerebrospinal fluid through the nose (rhinorrhea), oozing through the ears (otorhea), or in both, ecchymosis over the mastoid area. Raccoon eyes are present after a basilar skull fracture **(*Carlson and Almond, 2009; Sole and Mosely, 2013*)**.

Spinal cord injury (SCI) is the second major neurological disability that is assessed early in the emergent phase of traumatic injury. Mechanisms of injuries that may result in SCI include hyperflexion and hyperextention. The initial treatment' with suspected SCI includes ABCs of resuscitation, spinal immobilization, and prevention of further injury through surgical stabilization of the spine. A complete sensory and motor neurological examination is performed, and x-ray studies of the cervical spine are obtained. A spinal CT scan may be performed to determine the approximate level of SCI because higher cervical spine injuries may result in the loss of phrenic nerve innervations, compromising the patient's ability to breathe spontaneously **(*Carlson and Almond, 2009; Pollak et al., 2011; Sole and Mosely, 2013*)**.

Exposure, in the last step of the primary assessment, all clothing should be removed to examine the patient entirely and allow for full visualization of the body to identify all injuries. This should be carried out respecting the dignity of the patient and in a way that prevents hypothermia. Once performed, the patient is covered to conserve body warmth and prevent hypothermia. Exposure decreases body temperature.

Hypothermia, defined as a core body temperature less than 35° C, is caused by a combination of accelerated heat loss and decreased heat production. A person is more susceptible to hypothermia after severe injury (especially older persons), excessive blood loss, alcohol use, and massive fluid resuscitation. Body temperature continues to fall after clothing removal, contact with wet linens, and surgical exposure of body cavities during the initial assessment. Moreover, uncontrolled hypothermia caused by rapid infusion of IV fluids slows the heart rate and eventually decreases cardiac output. Optimally, IV fluids are warmed by using a fluid warming rapid infusion device. Other adjuncts to minimize the negative effects of hypothermia include warming the room, covering the patient's head, applying warm blankets, or using convection air blankets **(*Louis et al., 2008; Pollak et al., 2011; Vankipuram, 2012*)**.

4. Secondary assessment

Secondary assessment is initiated after the primary assessment has been completed and all actual or potential life threatening injuries have been identified and treated. Secondary assessment is a methodical head to toe evaluation of the patient using the assessment techniques of inspection, palpation, percussion and auscultation to identify all injuries. It includes **F**ull set of vital signs, **G**ive comfort measures, and **H**istory, **H**ead to toe assessment (focused assessment) ***(Kantonen et al, 2012; Rominski et al, 2014)***.

Set of vital signs are obtained, including blood pressure BP, heart rate HR, respiratory rate RR, and temperature T. BP should be performed in both arms if the patient sustained trauma to the chest. Electrocardiogram monitoring, pulse oximetry and end-tidal carbon dioxide (Co2) monitoring are initiated. A Foley catheter is placed to monitor urine output unless contraindications are noted. A gastric tube is placed to prevent aspiration of stomach contents, gastric tubes cannot be nasally placed in patients with severe facial fractures. Laboratory studies including blood typing, hematocrit (Hct), Hgb, coagulation studies, electrolytes, glucose, blood urea nitrogen (BUN), creatinine (Cr), blood alcohol, arterial blood gas (ABG) should be done ***(Molyneux et al., 2005; Louis et al., 2008; Carlson and Almond, 2009; Sole and Mosely, 2013)***.

Comfort measures, assessment of pain and sedation should also occur, which is often difficult in the confused or unresponsive patient. The device that can be very

helpful in the assessment of pain is the mnemonic OPQRST (onset, provocation, quality, region/ radiation, severity on scale of 1-10 and timing of pain). Of special note, providing analgesia in new trauma patients can be a challenge, although minimizing pain is important, the presence of pain helps identify injuries. During assessment, smaller doses of analgesics and sedatives may be given, full doses of these agents then be given following identification of all injuries. ***History*** of the incident is obtained, along with the patient's medical history, if known. Use mnemonic SAMPLE history (Symptoms, Allergies, Medication, Past medical history, Last meal, Events and surrounding accident) is most important to gather the patient's symptoms, allergies to any medication, foods or other substance, medication currently used, preexisting medical conditions, and tetanus immunization history ***(Ropert, 2010; Pollak et al., 2011; Rominski et al, 2014)***.

Additional diagnostic tests may be performed as part of the secondary assessment to gather more information about injury location and severity. Cervical spine x-rays are done immediately on admission the ED in patients involved in motor vehicle commission (MVCs). The chest x-ray will identify lethal pulmonary injuries and correct placement of chest tubes and central venous catheters. Focused assessment with sonography for trauma (FAST) or diagnostic peritoneal lavage (DPL) assess for bleeding in the hemodynamically unstable patient with likely abdominal injuries. Head CT scan is deferred until the patient hemodynamically stable, and magnetic resonance imaging (MRI) scans to identify spinal cord injury must be delayed until the patient is completely hemodynamically stable. Early interventions for non-life-threatening injuries may be initiated during the secondary assessment, these basic interventions may include splinting and elevation of fractures, administration tetanus toxoid, and provision of emotional support and comfort. Repeated assessments of vital signs are important to determine resuscitation status and the need for additional interventions and diagnostic work up **(*Carlson and Almond, 2009; Dewit and Kumagai, 2013; Sole and Mosely, 2013*)**.

Head to toe assessment of any area or that has an abnormality or injury for DCAP-BTLS (Deformity/Contusion/ Crepitus /Abrasion Puncture Bruising/Bleeding, Tenderness, Laceration, Swelling) is done **(*Louis et al., 2008; Pollak et al., 2011*)**.

For head, face and cervical spine, a more detailed examination of these areas could include a careful examination of the head, scalp, ears, eyes, nose, and mouth for abrasions, lacerations, and contusions. Examine the eyes and eyelids, checking for redness and for contact lenses. Use a penlight to determine whether the pupils are equal and reactive, and look for any fluid drainage or blood, particularly around the ears and nose, otorrhoea or rhinorrhoea should be noted. Also check for foreign objects and blood in the anterior chamber of the eye. Look for bruising or discoloration around the eyes (raccoon eyes) or behind the ears (Battle's sign), these signs may be associated with head trauma ***(El-Zalabany et al., 2011; Hammond, and Zimmermann, 2013; Sole and Mosely, 2013).***

Next, palpate gently but firmly around the face, scalp, eyes, ears, and nose for tenderness, deformity, or instability. Also ask a responsive patient if he feel any pain or tenderness. Tenderness or abnormal movement of bones often signals a serious injury and the patient may be at risk for upper airway obstruction. Monitor the airway carefully in these patients. Next, look inside the mouth, Loose or broken teeth or a foreign object may block the airway. You should also look for lacerations, swelling, bleeding, and any discoloration in the mouth and the tongue. Smell the patient's breath. Any unusual odors, such as a strong alcohol odor or fruity breath odor, should be reported and recorded **(*Carlson and Almond, 2009; Pollak et al., 2011*)**.

Palpate the front and back of the neck for tenderness and deformity. Patients with facial or head trauma must be presumed to have cervical spine injury until this has been excluded. Cervical spine immobilization should be maintained at all times. While maintaining careful cervical spine immobilization, the neck should be examined for any obvious injury to the bones or soft tissues. Any evidence of damage should be concerned about potential airway obstruction. Also check for tracheal deviation or distended neck veins, which may indicate a missed tension pneumothorax or cardiac tamponade. The distended jugular veins this is normal in a patient who is lying down, however, their presence in the patient who is sitting up may suggest some type of failure **(*Sole and Mosely, 2013; Brown et al., 2011*)**.

Chest, throughout the patient assessment process, the patient should be asked about chest pain. Any sign of obvious injury should be noted, e.g. chest wounds, surface/penetrating trauma, paradoxical movement, subcutaneous emphysema. Next,

inspect, visualize, and palpate over the chest area for injury or signs of trauma, including bruising, tenderness, or swelling. Watch for both sides of the chest to rise and fall together with normal breathing. Observe for abnormal breathing signs, including retractions (when the skin pulls in around the ribs during inspiration) or paradoxical motion (when only one section of the chest rises on inspiration while another area of the chest falls). Retractions that is impairing the flow of air into and out of the lungs. Paradoxical motion is associated with a fracture of several ribs (flail), causing a section of the chest wall to move independently from the rest of the chest wall. Feel for grating of the bones as the patient breathes. Crepitus is often associated with a ruptured airway, pneumothorax, or rib fractures. Palpate the chest for subcutaneous emphysema, especially in cases of severe blunt chest trauma ***(Jones et al., 2009; Middleton, 2010; Pollak et al., 2011).***

Also, perform a more detailed evaluation of the patient's breath sounds. Listening to the lungs at the apices, at the midclavicular lines bilaterally, at the bases, and at the midaxillary lines bilaterally, check for the specific sounds of breathing and identify one of the following: ***Normal breath sounds***. These are clear and quiet on both inspiration and expiration. ***Wheezing breath sounds***. These suggest an obstruction of the lower airways. Wheezing is a high-pitched squeal that is most prominent on expiration. ***Wet breath sounds***. These may indicate cardiac failure. A moist crackling, usually on both inspiration and expiration, is called rales, or crackles. ***Congested breath sounds***. These may suggest the presence of mucus in the lungs. Expect to hear a low pitched, noisy sound that is most prominent on expiration. This sound may be referred to as rhonchi. The patient often reports a productive cough associated with this sound. ***A crowing sound***. This is often heard without a stethoscope and may indicate that the patient has an airway obstruction in the neck or upper part of the chest. Expect to hear a brassy, crowing sound that is most prominent on expiration. This sound may be referred to as stridor **(*Dolan and Holt, 2008; Brown et al., 2011; Pollak et al., 2011; Sole and Mosely, 2013*)**.

For Abdomen, An assessment of pain should be made, If the patient is conscious. The abdomen should be palpated in both the front and back and examined for any obvious injury, distension, rigidity, guarding, contusions, scars and bowel sounds. Such an examination should be careful and thorough, as bleeding into the

abdomen from damaged organs is frequently the cause of life threatening hypovolaemia. The most important aspect of the abdominal assessment is to determine whether the patient requires surgery or not. A nasogastric or orogastric tube and a urinary catheter should have been inserted during the primary assessment and is always inserted before diagnostic peritoneal lavage (DPL) is performed. Such measures will ensure that abdominal and pelvic organs are less likely to be damaged during the procedure. DPL and focused assessment with sonography for trauma (FAST) are quick diagnostic procedures to determine intra abdominal bleeding. They are indicated when results of physical examination are equivocal or the patient is unable to participate in the assessment **(*Carlson and Almond, 2009; Pollak et al., 2011; Hammond, and Zimmermann*, 2013)**.

Check the pelvis to identify problems. If the patient is not complaining of pain in the pelvis, gently press in and down on the pelvis to assess for pain, tenderness, instability, and crepitus, all may indicate a fractured pelvis and the potential for shock. Injuries to the pelvis and surrounding abdomen may bleed profusely, so continue to monitor the patient's skin color and be sure to give supplemental oxygen to minimize the effects of shock. Also look for blood in the rectum, which may indicate damage to the gut or pelvis. A high riding prostate may be indicative of urethral injury and loss of sphincter tone is often associated with spinal injury. Bony fragments may also be felt, indicating pelvic damage ***(Lim et al., 2006; Pollak et al., 2011; Elliott et al, 2012; Sole and Mosely, 2013).***

Inspect each extremity for any signs of trauma and using the DCAP-BTLS method. Also evaluate the distal circulation, sensation, and movement. Check the distal pulses on the foot (dorsalis pedis or posterior tibial) and wrist (radial) Also check circulation. Evaluate the skin color in the hands or feet. Is it normal? How does it compares with the skin color of the other extremities? Pale or cyanotic skin may indicate poor circulation in that extremity. Assessment of motor function by asking the patient to wiggle his/her fingers or toes. An inability to move a single extremity can be the result of a bone, muscle, or nerve injury. An inability to move several extremities may be a sign of a brain abnormality or spinal cord injury. Also evaluate sensory function in the extremity by asking the patient to close his or her eyes. Gently squeeze or pinch a toe, and ask the patient to identify what you are doing. The inability to feel

sensation in the extremity may indicate a local nerve injury. Inability to feel it in several extremities may be a sign of a spinal cord injury. Both arms and legs should be examined for contusion or deformity. Each should be assessed for pain, pallor, paraesthesia and paralysis. If you have already identified an injury, regular evaluation of the circulation, sensation, and movement below the injury will allow you to be sure that the injury has not compromised neurovascular status **(*Fultz and Stuit,2005; Dolan and Holt, 2008; Ropert, 2010; Rominski et al, 2014*)**.

Inspect posterior body for tenderness, deformity, and open wounds. If you are placing the patient on a backboard, it is particularly important that you check the back before you log roll the patient, and before you place him or her onto a backboard. Keep the spine in line at all times as you log roll the patient onto his or her side. Carefully palpate the spine from the neck to the pelvis for tenderness or deformity, and look under the patient's clothing for obvious injuries, including bruising and bleeding **(*Pollak et al., 2011; Sole and Mosely, 2013*)**.

Finally, triage nurse analyze information collected in the assessment phase and decides whether the patient needs to be seen immediately or can wait safely for further assessment. Patients who require immediate care are promptly taken to the treatment area while stable patients direct to the assessment nurse. The most common triage system uses five level triage system: immediate (0 minutes), very urgent (10 minutes), urgent (30 minutes), semi-urgent (60 minutes) and non-urgent (120 minutes). Nurses apply the category that is most appropriate to the urgency of the patient's condition and identifying interventions to meet the expected outcomes. Also triage nurse should reassess the patient and evaluate the effectiveness of intervention and expected outcomes based on new or changing patient data ***(Christ et al., 2009; Gerdtz, and Palmer, 2009; Ganley and Gloster, 2011)***.

Additionally, documentation of triage assessment should be clear, concise, and support the assigned severity rating. Each hospital needs to have a triage policy that includes documentation requirements. Documentation of each interaction between the nurse performing triage and the patient and/or significant others are another area of accountability for practice. Any change in the patient's condition should be documented clearly. This documentation should include information on patient status, vital sign, Glasgow coma scale, accident data, past and present medical history, the time of the re-

triage, the reason for the re-triage and who was responsible for the performance of the re-triage, and documentation of any treatment administered. Some patients choose to leave prior to medical assessment. If such a patient informed the triage nurse, that he/she is not waiting, the triage nurse should document this decision, as well as any advice or information given to the patient. Additionally, Triage nurse must maintain any information that has been provided in confidence to them **(*Gerdtz and Palmer, 2009; El-Zalabany et al., 2011; Ganley and Gloster, 2011; Hammond, and Zimmermann, 2013*)**.

Competency of Triage Nurse in Emergency Department

Clinical competency among nurses working within specialty areas has been linked to initial and ongoing education. According to ***(Judd et al., 2010)*** education and clinical competency have been linked since the 1800s, the era of Florence Nightingale. Despite this link, variability exists with regard to policy, procedures, standards, and financial support for continuing education programs that focus on maintaining clinical competency ***(Bolin et al., 2011)***.

Improving competence of new graduate nurses is a major challenge. Up to now, several international and local studies have been carried out regarding the assessment of new graduate nurses competence. Competence is the application of knowledge and the interpersonal, decision making and psychomotor skills expected for the nurses practice, within the context of public health, welfare and safety. Also, competency is the ability to perform the task with desirable outcomes under the varied circumstances of the real world. Nurses' competencies in ED must be appraised in order to ascertain the provision of safe and competent care to the emergency patients ***(Sims et al., 2008; Ulrich and Krozek, 2010; Ahmed, 2011).***

The standards for competence provide the guidelines for emergency triage nurses to achieve, evaluate, and maintain competence in nursing practice. Also clinical competency provide framework to identify the expected level of knowledge, skills and ability of staff, to ensure the delivery of safe, quality and standardized care. Emergency triage nurses are expected to evaluate knowledge and skills in relation to the expectations of the current nursing practice role. Competence should be evaluated on a regular basis. In addition, competence should be evaluated when practice circumstances

change, e.g., change in job or clinical setting or in response to practice related concerns. Moreover, competence can be measured by using a variety of methods such as written tests, computerized tests, records of performance, and lab simulations, direct observation, and OSCEs. These methods differ in a number of ways ***(Meretoja and Isoaho, 2004; Delamare and Wintertone, 2005; Salem, 2006; Hoyt and Thoms, 2008).***

Benner ***(2004)*** was one of the first nurse researchers to address the issue of competency in nursing. She conducted three studies which sought to determine how nurses attain skills and develop knowledge in the clinical area while progressing from the novice to the expert stage. Understanding and recognizing the all aspects of performance that the nurse passes through as he or she travels from the novice to the expert stage can provide additional direction to help to guide the educational development of the nurse ***(Benner, 2004; Hurme, 2007; Juan, 2009; Hoffman, 2012).***

Regarding newly graduated nurses' Competence, NGNs are entering the work force and finding that they have neither the practice expertise nor the confidence to navigate what has become a highly dynamic and intense clinical environment burdened by escalating levels of patient acuity and nursing workload. During this time, nurses may be working to develop a sense of belonging, independence in their practice and exploring their future development ***(Schoessler and Waldo, 2006; Duchscher, 2008; Mckenna and Jennifer, 2008)***.

Newly graduated nurses require support in developing confidence, professional competence and improve knowledge and skills. NGNs refers to nurses who are within their first year of nursing practice. Some studies consider nurses to be newly graduated up to two years after graduation ***(Manias and Bullock, 2002; Mitchell, 2011; Davis, 2012)***. Recently, little is known about how NGNs perceive their knowledge and experiences. NGNs often, fearful of making mistakes, lack confidence, and fearful of facing new situations during the first period of employment following graduation ***(Mckenna and Jennifer, 2008; Patterson et al., 2010)***.

Emergency triage nurses, as professionals, are accountable for their practice. The accountability comes from the utilization of available protocols, the completion of

the correct documentation, and adherence to standards and quality guidelines. All nurses should know some basic legal principles, which include consent, the elements of negligence, standards of care, and how policies and guidelines can influence practice. There is an expectation that the nurse performing the role of the triage will have adequate experience, training and supervision to perform the triage role. The employing institution also has a responsibility to ensure that the staff are adequately prepared to perform the role ***(Sands, 2007; Ganley and Gloster,2011)***.

Finally, emergency triage nurses play a very important role in the care of emergency patients to achieve highly qualified care. There is a significant need for implementing triage training program for improving the competencies of NGNs working in emergency department.